

=> FIL REG  
FILE 'REGISTRY' ENTERED AT 17:06:18 ON 03 JAN 2011  
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=> D HIS NOFILE

FILE 'HCA' ENTERED AT 12:30:07 ON 03 JAN 2011  
E US2006-581005/APPS  
L1 1 SEA SPE=ON ABB=ON PLU=ON US2006-581005/AP  
E DE2003-10357315/APPS  
L2 1 SEA SPE=ON ABB=ON PLU=ON (DE2003-10357315/AP OR DE2003-10357  
315/PRN)  
E WO2004-EP13312/APPS  
L3 1 SEA SPE=ON ABB=ON PLU=ON (WO2004-EP13312/AP OR WO2004-EP1331  
2/PRN)  
L4 1 SEA SPE=ON ABB=ON PLU=ON (L1 OR L2 OR L3)  
SEL L4 RN

FILE 'REGISTRY' ENTERED AT 12:31:11 ON 03 JAN 2011  
L5 16 SEA SPE=ON ABB=ON PLU=ON (435293-93-9/BI OR 7439-98-7/BI OR

FILE 'HCA' ENTERED AT 12:32:35 ON 03 JAN 2011  
SEL L4 AU  
L6 164 SEA SPE=ON ABB=ON PLU=ON ("GERHARD, ANJA"/AU OR "STOESSEL,  
PHILIPP"/AU OR "VESTWEBER, HORST"/AU)  
E MERCK/CO  
L7 46962 SEA SPE=ON ABB=ON PLU=ON (MERCK+ALL/CO,CS,PA OR "MERCK A  
L8 27359 SEA SPE=ON ABB=ON PLU=ON ("MERCK JAPAN LIMITED"+ALL/CO,CS,PA  
L9 49438 SEA SPE=ON ABB=ON PLU=ON (L7 OR L8)

FILE 'LREGISTRY' ENTERED AT 13:15:52 ON 03 JAN 2011  
L10 STR  
L11 STR L10  
L12 STR

FILE 'REGISTRY' ENTERED AT 13:22:04 ON 03 JAN 2011  
L13 50 SEA SSS SAM L11 OR L12  
L14 SCR 2016 OR 1729 OR 1730 OR 1816 OR 1542  
L15 50 SEA SSS SAM (L11 OR L12) AND L14  
L16 1374383 SEA SPE=ON ABB=ON PLU=ON PMS/CI  
L17 0 SEA SPE=ON ABB=ON PLU=ON L5 AND L16  
L18 SCR 2043  
L19 50 SEA SSS SAM (L11 OR L12) AND L14 NOT L18

FILE 'LREGISTRY' ENTERED AT 13:43:10 ON 03 JAN 2011  
L20 STR L11  
L21 STR L12

FILE 'REGISTRY' ENTERED AT 13:45:37 ON 03 JAN 2011  
L22 SCR 2016 OR 1729 OR 1816 OR 1542  
L23 50 SEA SSS SAM (L20 OR L21) AND L22  
L24 50 SEA SSS SAM (L20 OR L21) AND L22 NOT L18

FILE 'HCA' ENTERED AT 15:27:54 ON 03 JAN 2011  
L25 175876 SEA SPE=ON ABB=ON PLU=ON (ELECTROLUM!N? OR ORGANOLUM!N? OR  
(ELECTRO OR ORGANO OR ORG#)(2A)LUM!N? OR LIGHT?(2A)(EMIT? OR  
EMISSION?) OR EL OR E(W)L OR L(W)E(W)D OR OLED)/BI,AB OR

LED/IT  
 SET SMARTSEL ON  
 L26 SEL PLU=ON L25 1-50000 RN : 8745 TERMS (SELECT ENDED BY  
 USER)  
 SET SMARTSEL OFF

FILE 'REGISTRY' ENTERED AT 15:35:24 ON 03 JAN 2011

L27 TRA PLU=ON L25 1- RN : 50070 TERMS  
 L28 50068 SEA SPE=ON ABB=ON PLU=ON L27  
 L29 TRA PLU=ON L25 11144- RN : 50556 TERMS  
 L30 50556 SEA SPE=ON ABB=ON PLU=ON L29  
 L31 TRA PLU=ON L25 21383- RN : 50376 TERMS  
 L32 50376 SEA SPE=ON ABB=ON PLU=ON L31  
 L33 TRA PLU=ON L25 34524- RN : 50311 TERMS  
 L34 50311 SEA SPE=ON ABB=ON PLU=ON L33  
 L35 TRA PLU=ON L25 57727- RN : 50734 TERMS  
 L36 50734 SEA SPE=ON ABB=ON PLU=ON L35  
 L37 TRA PLU=ON L25 79851- RN : 50351 TERMS  
 L38 50351 SEA SPE=ON ABB=ON PLU=ON L37  
 L39 TRA PLU=ON L25 99464- RN : 50499 TERMS  
 L40 50499 SEA SPE=ON ABB=ON PLU=ON L39  
 L41 TRA PLU=ON L25 112996- RN : 50264 TERMS  
 L42 50264 SEA SPE=ON ABB=ON PLU=ON L41  
 L43 TRA PLU=ON L25 138292- RN : 31183 TERMS  
 L44 31182 SEA SPE=ON ABB=ON PLU=ON L43  
 L45 345027 SEA SPE=ON ABB=ON PLU=ON L28 OR L30 OR L32 OR L34 OR L36 OR  
 L38 OR L40 OR L42 OR L44  
 L46 50 SEA SUB=L45 SSS SAM (L20 OR L21)  
 L47 39366 SEA SUB=L45 SSS FUL (L20 OR L21)  
 SAV L47 CLA005/A

FILE 'HCA' ENTERED AT 16:55:30 ON 03 JAN 2011

L48 380942 SEA SPE=ON ABB=ON PLU=ON L47  
 L49 22614 SEA SPE=ON ABB=ON PLU=ON L48 AND L25  
 E ELECTROLUMINESCENT DEVICES/CT  
 L50 95754 SEA SPE=ON ABB=ON PLU=ON "ELECTROLUMINESCENT DEVICES"+PFT/CT  
 L51 11199 SEA SPE=ON ABB=ON PLU=ON L49 AND L50  
 L52 23882 SEA SPE=ON ABB=ON PLU=ON PHOSPHORES?  
 L53 796 SEA SPE=ON ABB=ON PLU=ON L51 AND L52  
 L54 2057 SEA SPE=ON ABB=ON PLU=ON HOLE (2A) BLOCK?  
 L55 58 SEA SPE=ON ABB=ON PLU=ON L53 AND L54  
 L56 4 SEA SPE=ON ABB=ON PLU=ON L55 AND (L6 OR L9)  
 L57 54 SEA SPE=ON ABB=ON PLU=ON L55 NOT L56  
 L58 10 SEA SPE=ON ABB=ON PLU=ON 1802-2003/PY,PRY,AY AND L57  
 L59 TRA PLU=ON L58 1- RN HIT : 16 TERMS

FILE 'REGISTRY' ENTERED AT 16:58:46 ON 03 JAN 2011

L60 16 SEA SPE=ON ABB=ON PLU=ON L59

FILE 'HCA' ENTERED AT 17:00:31 ON 03 JAN 2011

L61 60 SEA SPE=ON ABB=ON PLU=ON L47 (L) L54  
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 L63 4 SEA SPE=ON ABB=ON PLU=ON L62 OR L56  
 L64 58 SEA SPE=ON ABB=ON PLU=ON L61 NOT L63  
 L65 22 SEA SPE=ON ABB=ON PLU=ON 1802-2003/PY,PRY,AY AND L64  
 L66 31 SEA SPE=ON ABB=ON PLU=ON L58 OR L65  
 L67 TRA PLU=ON L66 1- RN HIT : 48 TERMS

FILE 'REGISTRY' ENTERED AT 17:04:08 ON 03 JAN 2011

L68            48 SEA SPE=ON ABB=ON PLU=ON L67  
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FILE 'REGISTRY' ENTERED AT 17:06:18 ON 03 JAN 2011

=> D L47 QUE STAT  
 L20            STR

$\begin{matrix} P \\ 6 \end{matrix} = \begin{matrix} G2 \\ 4 \end{matrix}$        $\begin{matrix} G2 \\ 5 \end{matrix} = \begin{matrix} S \\ 6 \end{matrix} = \begin{matrix} G2 \\ 7 \end{matrix}$       G1 8

VAR G1=3/6  
 VAR G2=0/S  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE  
 L21            STR

$\begin{matrix} G1 \\ 1 \end{matrix} = \begin{matrix} G2 \\ 2 \end{matrix}$

VAR G1=S/C  
 VAR G2=0/S  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE  
 L25            175876 SEA FILE=HCA SPE=ON ABB=ON PLU=ON (ELECTROLUMIN? OR  
                   ORGANOLUMIN? OR (ELECTRO OR ORGANO OR ORG#)(2A)LUMIN? OR  
                   LIGHT? (2A)(EMIT? OR EMISSION?) OR EL OR E(W)L OR L(W)E(W)D OR  
                   OLED)/BI,AB OR LED/IT  
 L27            TRANSFER PLU=ON L25 1- RN : 50070 TERMS  
 L28            50068 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L27  
 L29            TRANSFER PLU=ON L25 11144- RN : 50556 TERMS  
 L30            50556 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L29  
 L31            TRANSFER PLU=ON L25 21383- RN : 50376 TERMS  
 L32            50376 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L31  
 L33            TRANSFER PLU=ON L25 34524- RN : 50311 TERMS  
 L34            50311 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L33  
 L35            TRANSFER PLU=ON L25 57727- RN : 50734 TERMS  
 L36            50734 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L35  
 L37            TRANSFER PLU=ON L25 79851- RN : 50351 TERMS  
 L38            50351 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L37

L39 TRANSFER PLU=ON L25 99464- RN : 50499 TERMS  
 L40 50499 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L39  
 L41 TRANSFER PLU=ON L25 112996- RN : 50264 TERMS  
 L42 50264 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L41  
 L43 TRANSFER PLU=ON L25 138292- RN : 31183 TERMS  
 L44 31182 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L43  
 L45 345027 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L28 OR L30 OR L32 OR  
 L34 OR L36 OR L38 OR L40 OR L42 OR L44  
 L47 39366 SEA FILE=REGISTRY SUB=L45 SSS FUL (L20 OR L21)

100.0% PROCESSED 167479 ITERATIONS ( 1 INCOMPLETE) 39366 ANSWERS  
 SEARCH TIME: 00.00.01

=> FIL HCA  
 FILE 'HCA' ENTERED AT 17:06:32 ON 03 JAN 2011  
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=> D L63 1-4 IBIB ABS HITSTR HITIND RETABLE

L63 ANSWER 1 OF 4 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 152:592162 HCA Full-text  
 TITLE: Cyclic arylphosphonic acid derivatives as  
 supplementary materials for organic  
 electroluminescent devices  
 INVENTOR(S): Stoessel, Philipp; Heil, Holger; Joosten,  
 Dominik; Pflumm, Christof; Gehrard, Anja;  
 Breuning, Esther; Parham, Amir Hossain  
 PATENT ASSIGNEE(S): Merck Patent GmbH, Germany  
 SOURCE: PCT Int. Appl., 10pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 3  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2010054730	A1	20100520	WO 2009-EP7406	20091015
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MB, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
DE 102008056688	A1	20100512	DE 2008-102008056688	20081111
KR 2010128207	A	20101207	KR 2009-55587	20090622

OTHER SOURCE(S): MARPAT 152:592162

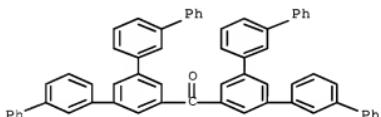
AB Phosphorus heterocyclic compds., preferably diazaphosphole, oxazaphosphole oxides, sulfides [Q2P(X)]nAr (1, Q = benzo, areno, hetareno, substituted 1,2-ethenediyl, etc.; Z = imino, O, S; X = O, S, preferably X = O; Ar = C6-60 aryl, arylene; n = 1-6, preferably n = 1-3), useful as matrix and/or supplementary materials for organic electroluminescent devices (OLEDs), preferably for blue- and green-emitting OLEDs, based on phosphorescent transition metal complexes, improving performance, efficiency and lifetime of the OLEDs, for making of emitting, electron-, exciton-, or hole-blocking layers, were prepared by heterocyclization of aromatic o-diamines, o-aminophenols Q(AH)2 with phosphonic dichlorides Ar[P(X)Cl2]n, which, in turn were prepared from the corresponding arylphosphonic, arenediphosphonic and arenetriphosphonic acids. The prepared compds. were tested in model OLEDs by doping the emission and hole-blocking layers, showing increase of efficiency and lifetime of the devices. In an example, 2,2'-(1,4-phenylene)bis(5,6-dimethyl-1,3-diphenyl[1,3,2]benzophosphole) P,P'-dioxide (1a, Q = 4,5-dimethylbenzene-1,2-diyl, Z = NPh, X = O, n = 2, Ar = 1,4-C6H4) was prepared by heterocyclization of 4,5-dimethyl-N,N'-diphenyl-1,2-benzenediamine with 1,4-benzenediphosphonic tetrachloride, Cl2P(O)-1,4-C6H4P(O)Cl2. In another example, the compound 1a, as matrix material doped with 10% tris(3-methyl-2-phenylpyridine)iridium for 30 nm-thick light-emitting layer, showed 57 cd/A efficiency at 1000 cd m-2 light d. and 560 h lifetime at 4000 cd m-2 light d., compared with 42 cd/A and 230 h for similar device using bis(9,9'-spirobifluoren-2-yl)phenylphosphine oxide as matrix material.

IT 1205555-94-7

(preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

RN 1205555-94-7 HCA

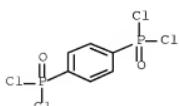
CN Methanone, bis([1,1':3',1'':3'',1''':3''',1''''-quinqephenyl]-5''-yl)- (CA INDEX NAME)



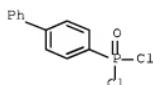
IT 1227269-53-5P, 1,4-Benzenediphosphonic tetrachloride  
(preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

RN 1227269-53-5 HCA

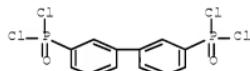
CN Phosphonic dichloride, P,P'-1,4-phenylenebis- (CA INDEX NAME)



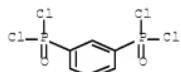
IT 77918-51-5P 1227269-76-2P 1227269-77-3P  
 (preparation of cyclic arylphosphonic acid derivs.,  
 benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic  
 electroluminescent devices)  
 RN 77918-51-5 HCA  
 CN Phosphonic dichloride, P-[1,1'-biphenyl]-4-yl- (CA INDEX NAME)



RN 1227269-76-2 HCA  
 CN Phosphonic dichloride, P,P'-[1,1'-biphenyl]-3,3'-diylbis- (CA INDEX NAME)



RN 1227269-77-3 HCA  
 CN Phosphonic dichloride, P,P'-1,3-phenylenebis- (CA INDEX NAME)



IPCI C09K0011-06 [I,A]  
 IPCR C09K0011-06 [I,C]; C09K0011-06 [I,A]  
 CC 29-7 (Organometallic and Organometalloidal Compounds)  
 Section cross-referenc(s): 73, 76  
 ST diazaphosphole oxazaphosphole oxide arylphosphonic deriv prepn matrix  
 material OLED; phosphorus heterocyclic phosphonic diamide aryl  
 prepn matrix material OLED; phosphonic deriv cyclic material  
 OLED matrix hole blocking; heterocyclization  
 arom amine arylphosphonic dichloride diazaphosphole oxazaphosphole prepn  
 IT Diphosphonates  
 Phosphonates  
 (arylphosphonate derivs.; preparation of cyclic arylphosphonic acid  
 derivs.,  
 benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic  
 electroluminescent devices)  
 IT Electroluminescent devices  
 (blue-emitting; preparation of cyclic arylphosphonic acid derivs.,  
 benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic  
 electroluminescent devices)

IT Amines  
 (diamines, aromatic; preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT Electroluminescent devices  
 (green-emitting; preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT Electrochemical cells  
 (light-emitting; preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT Plasmon  
 (organic plasmon emitting devices; preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT Field effect transistors  
 Integrated circuits  
 Optical detectors  
 Semiconductor lasers  
 Solar cells  
 Thin film transistors  
 (organic; preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT Heterocyclic compounds  
 (phosphorus, 1,3,2-diazaphosphole 2-oxides; preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT Electrophotographic photoconductors (photoreceptors)  
 Heterocyclization  
 (preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT 3375-31-3 13716-12-6, Tri-tert-butylphosphine 78271-46-2, Phosphonic acid, 1,3-phenylenebis-  
 (preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT 1227269-57-9P 1227269-58-0P 1227269-59-1P 1227269-60-4P  
 1227269-61-5P 1227269-62-6P 1227269-63-7P 1227269-79-5P  
 (preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 25387-93-3,  
 (8-Quinolinolato)lithium 50926-11-9, Indium tin oxide 58328-31-7  
 105598-27-4 123847-85-8, 1,1'-Biphenyl-4-4'-diamine,  
 N,N'-di-1-naphthalenyl-N,N'-diphenyl- 126213-51-2, PEDOT 164724-35-0  
 359014-71-4 435294-03-4 515834-67-0 561064-11-7 613682-85-2  
 1206465-62-4 1207176-84-8  
 (preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT 62-53-3, Aniline, reactions 92-66-0 92-67-1, [1,1'-Biphenyl]-4-amine  
 95-53-4, o-Toluidine, reactions 106-49-0, p-Toluidine, reactions  
 504-24-5, 4-Pyridinamine 534-85-0, 1,2-Benzenediamine, N-phenyl-  
 583-53-9, 1,2-Dibromobenzene 880-68-2, Phosphonic acid,  
 1,4-phenylenebis- 3842-55-5 10498-56-3, 1,4-Benzenediphosphonous  
 tetrachloride 24932-48-7 28394-83-4, 1,2-Benzenediamine,

N,N'-diphenyl- 38613-89-7, Phosphorous dichloride, 1,1'-biphenyl-4-yl-77918-47-9, Phosphoric acid, 1,1'-biphenyl-4-yl- 82495-68-9, 1,3-Benzenediphosphorous tetrachloride 108724-77-2, Phosphonic acid, 1,1'-biphenyl-3,3'-diylbis- 1227269-78-4  
(preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT 64436-68-6P 253334-40-6P 773056-31-8P 956471-82-2P 1225231-00-4P  
1227269-53-5P, 1,4-Benzenediphosphonic tetrachloride  
1227269-54-6P 1227269-55-7P 1227269-56-8P 1227269-73-9P  
1227269-80-8P 1227269-81-9P  
(preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

IT 77918-51-5P 1227269-64-8P 1227269-65-9P 1227269-66-0P  
1227269-67-1P 1227269-68-2P 1227269-70-6P 1227269-71-7P  
1227269-72-8P 1227269-74-0P 1227269-75-1P 1227269-76-2P  
1227269-77-3P 1227269-82-0P 1227269-83-1P 1227269-84-2P  
1227269-85-3P  
(preparation of cyclic arylphosphonic acid derivs., benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic electroluminescent devices)

## RETABLE

Referenced Author (RAU)	Year (RYP)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anchisi, C	1979	16	1439	JOURNAL OF HETEROCYC HCA	
Anisimova	1976	146	1807	JOURNAL OF GENERAL C	
Konica Minolta Holdings	2007	1		JP 2007329495 A	HCA
Lister, J	1966	1	1242	JOURNAL OF THE CHEMI HCA	
Satoshi, O	1995	141	1889	HETEROCYCLES	

L63 ANSWER 2 OF 4 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 145:498536 HCA Full-text

TITLE: Organic electronic devices and boronic acid and boronic acid derivatives used therein

INVENTOR(S): Stoessel, Philipp; Breuning, Esther; Buesing, Arne; Parham, Amir; Heil, Holger; Westweber, Horst

PATENT ASSIGNEE(S): Merck Patent G.m.b.H., Germany

SOURCE: PCT Int. Appl., 159pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006117052	A1	20061109	WO 2006-EP3150	20060406
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,				

GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP 1888706	A1	20080220	EP 2006-724095	20060406
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR				
JP 2008541417	T	20081120	JP 2008-509318	20060406
US 20090134384	A1	20090528	US 2007-912939	20071029
CN 101171320	A	20080430	CN 2006-80015401	20071105
KR 2008012337	A	20080211	KR 2007-7028263	20071203

PRIORITY APPLN. INFO.:

EP 2005-9643	A	20050503
WO 2006-EP3150	W	20060406

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 145:498536

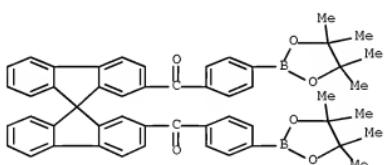
AB Organic electronic devices (e.g., organic or polymer light-emitting diodes, organic field-effect transistors, organic integrated circuits, organic thin-film transistors, organic light-emitting transistors, organic solar cells, organic field quenching devices, organic light-emitting cells, organic photoreceptors, and organic laser diodes) are described which comprise  $\geq 1$  organic film including  $\geq 1$  aromatic boronic acid or boronic acid derivative compound. The compds. may serve as fluorescent or phosphorescent dopants, as hole-blocking materials, as hole-transporting materials, or as electron-transporting materials. Oligomeric, dendimeric, and polymeric compds. of boronic acid or boronic acid derivative compds. are also described. Methods for synthesizing polymers including boronic acid derivs. are described which entail polycondensation of aliphatic or aromatic bis(diol), bis(dithiols), bis(diamines), or similar higher substituted compds. with an aromatic bisboronic acid or higher boronic acid or by reaction of an aromatic compound that includes 2 hydroxy, thiol, or amino groups as well as a boronic acid group.

IT 914307-04-3P 914307-06-5P

(organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

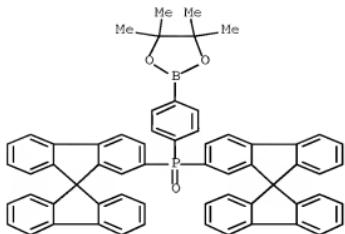
RN 914307-04-3 HCA

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis([4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]- (9CI) (CA INDEX NAME)

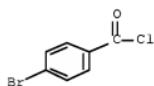


RN 914307-06-5 HCA

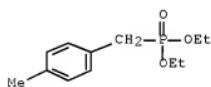
CN Phosphine oxide, 9,9'-spirobi[9H-fluoren]-2-yl-9,9'-spirobi[9H-fluoren]-2'-yl[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]- (CA INDEX NAME)



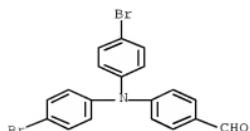
IT 586-75-4 3762-25-2 25069-38-9,  
 Bis(4-bromophenyl)(4-formylphenyl)amine 119001-43-3  
 187595-15-9  
 (organic electronic devices and boronic acid and boronic acid derivs. used  
 in them and production of polymers including boronic acid-containing  
 groups)  
 RN 586-75-4 HCA  
 CN Benzoyl chloride, 4-bromo- (CA INDEX NAME)



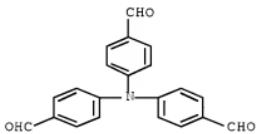
RN 3762-25-2 HCA  
 CN Phosphonic acid, P-[(4-methylphenyl)methyl]-, diethyl ester (CA INDEX  
 NAME)



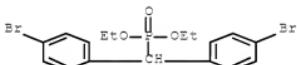
RN 25069-38-9 HCA  
 CN Benzaldehyde, 4-[bis(4-bromophenyl)amino]- (CA INDEX NAME)



RN 119001-43-3 HCA  
 CN Benzaldehyde, 4,4',4''-nitrilotris- (CA INDEX NAME)

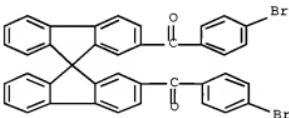


RN 187595-15-9 HCA  
 CN Phosphonic acid, [bis(4-bromophenyl)methyl]-, diethyl ester (9CI) (CA INDEX NAME)

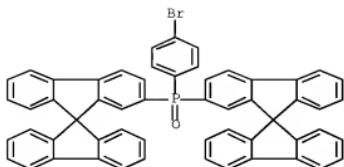


IT 914307-05-4P, 2,2'-Bis(4-bromobenzoyl)spiro-9,9'-bifluorene  
 914307-07-6P  
 (organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

RN 914307-05-4 HCA  
 CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(4-bromophenyl)- (CA INDEX NAME)



RN 914307-07-6 HCA  
 CN Phosphine oxide, (4-bromophenyl)bis(9,9'-spirobi[9H-fluoren]-2-yl)- (9CI) (CA INDEX NAME)



IPC1 C09K0011-06 [I,A]; H05B0033-14 [I,A]; C07F0005-02 [I,A]; C07F0005-05 [I,A]; C07F0005-00 [I,C\*]; C07F0015-00 [I,A]

IPC1 C09K0011-06 [I,C]; C09K0011-06 [I,A]; C07F0005-00 [I,C]; C07F0005-02 [I,A]; C07F0005-05 [I,A]; C07F0015-00 [I,C]; C07F0015-00 [I,A]; H05B0033-14 [I,C]; H05B0033-14 [I,A]

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 52, 73, 74

ST electronic device boronic acid compd; fluorescent boronic acid compd; phosphorescent boronic acid compd; light emitting diode boronic acid compd; field effect transistor boronic acid compd; integrated circuit boronic acid compd; thin film transistor boronic acid compd; light emitting transistor boronic acid compd; solar cell boronic acid compd; field quenching device boronic acid compd; light emitting cell boronic acid compd; photoreceptor boronic acid compd; laser diode boronic acid compd

IT Electrical materials

Fluorescent substances

Phosphorescent substances

Thin film transistors

(organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

IT Transistors

(organic light-emitting; organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

IT Electroluminescent devices

Electrophotographic photoconductors (photoreceptors)

Field effect transistors

Integrated circuits

Semiconductor devices

Semiconductor lasers

Solar cells

(organic; organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

IT 910244-23-4P 914306-83-5P, 10-(4-Methylnaphth-1-yl)anthracen-9-boronic acid pinacol ester 914306-84-6P 914306-85-7P 914306-86-8P 914306-88-0P 914306-90-4P 914306-91-5P 914306-94-8P 914306-95-9P 914306-96-0P 914306-97-1P 914306-98-2P 914307-03-2P 914307-04-3P 914307-06-5P 914307-08-7P 914307-09-8P 914307-11-2P

(organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

IT 64-19-7, Acetic acid, reactions 83-53-4, 1,4-Dibromonaphthalene

84-65-1, Anthraquinone 90-11-9, 1-Bromonaphthalene 120-80-9,  
 Pyrocatechol, reactions 121-43-7, Trimethyl borate 128-08-5,  
 N-Bromosuccinimide 159-66-0, Spiro-9,9'-bifluorene 523-27-3,  
 9,10-Dibromoanthracene 583-53-9, 1,2-Dibromobenzene 586-75-4  
 611-24-5, 2-Methylaminophenol 620-93-9, Bis(4-methylphenyl)amine  
 633-70-5, 2,6-Dibromoanthraquinone 918-21-8 1564-64-3,  
 9-Bromoanthracene 3762-25-2 7726-95-6, Bromine, reactions  
 15546-43-7, N,N',N'-Tetraphenylbenzidine 25015-63-8, Pinacolborane  
 25069-38-9, Bis(4-bromophenyl) (4-formylphenyl)amine 58328-31-7  
 85199-06-0, 2,5-Dimethylphenylboronic acid 100622-34-2, 9-Anthracene  
 boronic acid 113040-41-8, Dibromopyrene 119001-43-3  
 187595-15-9 454454-92-3 613682-84-1 914306-87-9  
 914450-89-8  
 (organic electronic devices and boronic acid and boronic acid derivs. used  
 in them and production of polymers including boronic acid-containing  
 groups)  
 IT 70430-42-1P 99372-95-9P 103986-53-4P 113664-24-7P,  
 N,N',N'-Tetra(4-bromophenyl)benzidine 177799-11-0P 426218-39-5P,  
 9,10-Bis(4-bromonaphth-1-yl)anthracene 560107-57-5P,  
 1,2-Bis(anthracen-9-yl)benzene 597570-70-2P 663954-33-4P,  
 1,6-Bis[(4-methylphenyl)amino]pyrene 756899-77-1P,  
 1,4-Bis(anthracen-9-yl)naphthalene 910244-27-8P,  
 1,2-Bis(10-bromoanthracen-9-yl)benzene 912483-18-2P 912483-19-3P  
 914306-89-1P, 2,6-Dibromo-9,10-bis(naphth-1-yl)anthracene 914306-92-6P,  
 1,6-Bis(2,5-dimethylphenyl)pyrene 914306-93-7P,  
 1,6-Bis(2,5-dimethylphenyl)-3,8-dibromopyrene 914307-00-9P  
 914307-02-1P 914307-05-4P,  
 2,2'-Bis(4-bromobenzoyl)spiro-9,9'-bifluorene 914307-07-6P  
 914307-10-1P, 1,6-Bis[(4-methylphenyl)amino]-3,8-dibromopyrene  
 914307-12-3P, 9,10-Bis-N,N-[di(4-bromophenyl)amino]anthracene  
 (organic electronic devices and boronic acid and boronic acid derivs. used  
 in them and production of polymers including boronic acid-containing  
 groups)  
 RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Amann, N	2002	18	14877	CHEMISTRY, A EUROPEA HCA	
Amann, N	2002	1	1687	SYNLETT	HCA
Anon	2003	2003	1	PATENT ABSTRACTS OF	
Anon	2003	2003	1	PATENT ABSTRACTS OF	
Baumgarten, M	2000	1104	1130	JOURNAL OF PHYSICAL	HCA
Beinhoff, M	2001	1	3819	EUROPEAN JOURNAL OF	HCA
Buettelmann, B	2003	1	1	US 2003229096 A1	HCA
Chisso Corporation	2001	1	1	EP 1142895 A	HCA
Chow, H	2002	185	3444	HELVETICA CHIMICA AC HCA	
Chow, H	2001	166	5042	JOURNAL OF ORGANIC C HCA	
Covion Organic Semicond	2002	1	1	WO 02051850 A	HCA
Covion Organic Semicond	2002	1	1	WO 02052661 A	
Eastman Kodak Company	2005	1	1	WO 2005020283 A	HCA
Finocchiaro, P	1973	195	17029	JOURNAL OF THE AMERI HCA	
Goswami, A	2004	1	2635	EUROPEAN JOURNAL OF	HCA
Ishikura, M	1985	123	12375	HETEROCYCLES	HCA
Ishiyama, T	1997	1201	192	SPECIAL PUBLICATION	HCA
Kaupp, G	2003	19	14156	CHEMISTRY, A EUROPEA HCA	
Ken-Tsung, W	2002	167	1041	JOURNAL OF ORGANIC C	
Koch, K	1991	1124	12091	CHEMISCHE BERICHTE	HCA
Koei Chem Co Ltd	2004	1	1	JP 2004189705 A	HCA
Konica Corp	2003	1	1	JP 2003031368 A	HCA
Lg Chem Ltd	2003	1	1	WO 03095445 A	HCA

Michels, J	12003	19	16167	CHEMISTRY, A EUROPEA HCA	
Modrakowski, C	12001	1	2143	SYNTHESIS	HCA
Ramsey, B	12005	1690	1962	JOURNAL OF ORGANOMET HCA	
Tirapattur, S	12002	106	18959	JOURNAL OF PHYSICAL	
Treacher, K	12004	1	1	US 2004260090 A1	HCA
Tsung, W	12004	1	1	US 2004147742 A1	1
Universal Display Corp	12003	1	1	WO 03033617 A	1
Wei-Bo, W	12002	1	1	US 2002019527 A1	1
Wong, K	12002	124	11576	JOURNAL OF THE AMERI HCA	
Yamashita, M	12000	139	14055	ANGEWANDTE CHEMIE IN HCA	
OS.CITING REF COUNT:	4	THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)			

L63 ANSWER 3 OF 4 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 143:50534 HCA [Full-text](#)  
 TITLE: Organic electroluminescent element  
 INVENTOR(S): Vestweber, Horst; Gerhard, Anja;  
 PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H.,  
 Germany  
 SOURCE: PCT Int. Appl., 28 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005054403	A1	20050616	WO 2004-EP13312	20041124
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10357315	A1	20050707	DE 2003-10357315	20031205
EP 1697483	A1	20060906	EP 2004-798062	20041124
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
CN 1894358	A	20070110	CN 2004-80036011	20041124
JP 2007522645	T	20070809	JP 2006-541841	20041124
US 20070134510	A1	20070614	US 2006-581005	20060526
KR 2006113939	A	20061103	KR 2006-7010957	20060603
PRIORITY APPLN. INFO.:			DE 2003-10357315	A 20031205
			WO 2004-EP13312	W 20041124

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:50534

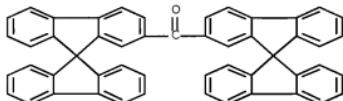
AB Organic electroluminescent devices comprising an anode, a cathode,  $\geq 1$  emitting layer, which consists of  $\geq 1$  matrix material which is doped with  $\geq 1$  phosphorescent emitter, and  $\geq 1$  hole-blocking layer are described which employ compds. including units described by the general formula Y:X (X has  $\geq 1$  nonbonded electron pair and is selected from NR, O, S, Se, or Te; R = C1-22 organic residue, OH, OR, NH2 NHR', and NR'2; R' = H or C1-20 organic residue;

and Y = C, P, As, Sb, Bi, S, Se, or Te) as the hole-blocking material, the material being selected so that the hole-blocking and matrix materials are not identical. The use of the compds. in other electronic devices, including organic field-effect and thin-film transistors, organic integrated circuits, organic solar cells, or organic laser diodes is also described, as are the devices.

IT 782504-07-3 782504-10-3 824426-27-9  
(devices with hole-blocking materials incorporating  
double bonded structural units)

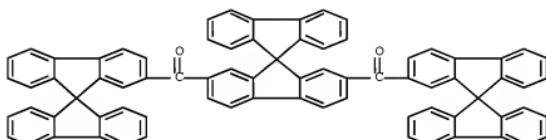
RN 782504-07-8 HCA

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



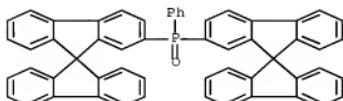
RN 782504-10-3 HCA

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,7-diylbis[9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



RN 824426-27-9 HCA

CN Phosphine oxide, phenylbis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



IPCI C09K0011-06 [ICM,7]; H01L0051-30 [ICS,7]; H01L0051-05 [ICS,7,C\*]; H05B0033-14 [ICS,7]; C07F0015-00 [ICS,7]

IPCR C07F0015-00 [I,C\*]; C07F0015-00 [I,A]; C08G0061-00 [I,C\*]; C08G0061-12 [I,A]; C09K0011-06 [I,C\*]; C09K0011-06 [I,A]; H01L0051-00 [I,C\*]; H01L0051-00 [I,A]; H01L0051-05 [I,C\*]; H01L0051-30 [I,A]; H01L0051-50 [N,C\*]; H01L0051-50 [N,A]; H05B0033-14 [I,C\*]; H05B0033-14 [I,A]

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related

Properties)  
 Section cross-reference(s): 52, 76

ST thin film transistor hole blocking material double bonded unit; transistor hole blocking material double bonded unit; org electroluminescent device hole blocking material double bonded unit; semiconductor laser hole blocking material double bonded unit; solar cell hole blocking material double bonded unit; integrated circuit hole blocking material double bonded unit; FET hole blocking material double bonded unit; hole blocking material double bonded unit

IT Thin film transistors  
 (devices with hole-blocking materials incorporating double bonded structural units)

IT Imines  
 Ketones, uses  
 Phosphazenes  
 Phosphines  
 Sulfones  
 Sulfoxides  
 (devices with hole-blocking materials incorporating double bonded structural units)

IT Electroluminescent devices  
 Field effect transistors  
 Integrated circuits  
 Semiconductor lasers  
 Solar cells  
 (organic; devices with hole-blocking materials incorporating double bonded structural units)

IT 782504-07-8 782504-10-3 824426-27-9  
 (devices with hole-blocking materials incorporating double bonded structural units)

IT 7439-98-7D, Molybdenum, compds. 7440-04-2D, Osmium, compds.  
 7440-05-3D, Palladium, compds. 7440-06-4D, Platinum, compds.  
 7440-15-5D, Rhenium, compds. 7440-16-6D, Rhodium, compds. 7440-18-8D,  
 Ruthenium, compds. 7440-22-4D, Silver, compds. 7440-33-7D, Tungsten,  
 compds. 7440-53-1D, Europium, compds. 7440-57-5D, Gold, compds.  
 94928-86-6, Tris(2-phenylpyridine)iridium 435293-93-9  
 (devices with hole-blocking materials incorporating double bonded structural units)

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1998	1998	1	PATENT ABSTRACTS OF	
Konica Corporation	12003			EP 1353388 A	HCA
Oki Electric Ind Co Ltd	1998			JP 10231479 A	HCA
Salbeck, J	1997	91	209	SYNTHETIC METALS	HCA
Sato, H	12002			US 2002125818 A1	
Spreitzer, H	12000	4105	125	PROCEEDINGS OF THE S	
Tokito, S	12000	363	290	THIN SOLID FILMS	
Watanabe, T	12002			US 2002015859 A1	HCA

L63 ANSWER 4 OF 4 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 143:34908 HCA Full-text  
 TITLE: Organic electroluminescent element  
 hole-blocking layers with  
 six-membered ring unit-containing compounds and  
 spirobifluorene derivatives and electronic devices  
 using them

INVENTOR(S): *Vestweber, Horst; Gerhard, Anja;  
Stoessel, Philipp*  
PATENT ASSIGNEE(S): *Covion Organic Semiconductors G.m.b.H.,  
Germany*  
SOURCE: *PCT Int. Appl., 38 pp.*  
DOCUMENT TYPE: *Patent*  
LANGUAGE: *German*  
FAMILY ACC. NUM. COUNT: *1*  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005053055	A1	20050609	WO 2004-EP13314	20041124
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10356099	A1	20050707	DE 2003-10356099	20031127
EP 1687857	A1	20060809	EP 2004-803245	20041124
EP 1687857	B1	20090909		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
CN 1954446	A	20070425	CN 2004-80035289	20041124
JP 2007520875	T	20070726	JP 2006-540365	20041124
AT 442675	T	20090915	AT 2004-803245	20041124
US 20070051944	A1	20070308	US 2006-580491	20060523
KR 2006122874	A	20061130	KR 2006-7010343	20060526
PRIORITY APPLN. INFO.:			DE 2003-10356099	A 20031127
			WO 2004-EP13314	W 20041124

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:34908

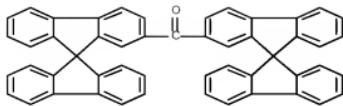
AB Organic electroluminescent devices comprising an anode, a cathode, and  $\geq 1$  emitting layer, which consists of a matrix material which is doped with  $\geq 1$  phosphorescent emitter, are described which employ compds. including units based on six-membered rings formed from C and/or N atoms, especially triazines, pyrimidines, pyridazines, and pyrazines, as materials for a hole-blocking layer between the emitting layer and the cathode. Compds., which may be employed in the devices, are described which comprise spirobifluorene derivs. with  $\geq 1$  triazine unit bonded to them, optionally along with other six-membered ring-containing substituents. The use of the design of the electroluminescent devices in other electronic devices, including organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors, is also described. Organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors.

IT 782504-07-8

(organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

RN 782504-07-8 HCA

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



IPCI H01L0051-30 [ICM,7]; H01L0051-05 [ICM,7,C\*]; C07D0251-24 [ICS,7]; C07D0251-00 [ICS,7,C\*]; C07D0253-06 [ICS,7]; C07D0253-00 [ICS,7,C\*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C\*]

IPCR C07D0239-00 [I,C\*]; C07D0239-26 [I,A]; C07D0251-00 [I,C\*]; C07D0251-24 [I,A]; C07D0253-00 [I,C\*]; C07D0253-065 [I,A]; H01L0051-05 [I,C\*]; H01L0051-30 [I,A]

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 27, 28, 74, 76

ST spirobifluorene deriv hole blocking layer electronic device; transistor six membered ring deriv hole blocking layer; integrated circuit six membered ring deriv hole blocking layer; solar cell six membered ring deriv hole blocking layer; laser diode six membered ring deriv hole blocking layer; photoreceptor six membered ring deriv hole blocking layer; six membered ring deriv hole blocking layer electronic device; triazine deriv hole blocking layer org electroluminescent device; pyrimidine deriv hole blocking layer org electroluminescent device; pyrazine deriv hole blocking layer org electroluminescent device; pyridazine deriv hole blocking layer org electroluminescent device

IT Imines

Ketones, uses

Phosphazenes

Phosphines

Sulfones

Sulfoxides

(emitting layer matrix; organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT Spiro compounds

(organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT Electroluminescent devices

Electrophotographic photoconductors (photoreceptors)

Integrated circuits

Semiconductor lasers

Solar cells

Transistors

(organic; organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT 7439-98-7D, Molybdenum, derivs. 7440-04-2D, Osmium, derivs.

7440-05-3D, Palladium, derivs. 7440-06-4D, Platinum, derivs.

7440-15-5D, Rhenium, derivs. 7440-16-6D, Rhodium, derivs. 7440-18-8D, Ruthenium, derivs. 7440-22-4D, Silver, derivs. 7440-33-7D, Tungsten, derivs. 7440-53-1D, Europium, derivs. 7440-57-5D, Gold, derivs. (emitting layer dopant; organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT 289-80-5D, Pyridazine, derivs. 289-95-2D, Pyrimidine, derivs. 290-37-9D, Pyrazine, derivs. 782504-07-8 (organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT 94928-86-6, Tris(2-phenylpyridine)iridium (organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT 853154-59-3P 853154-60-6P 853154-61-7P (organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

IT 3842-55-5, 2-Chloro-4,6-diphenyl-1,3,5-triazine 34177-11-2, 3-Chloro-5,6-diphenyl-1,2,4-triazine 463944-32-3 853154-62-8 (organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R V L)	PG (R PG)	Referenced Work (R WK)	Referenced File
Anon	12003	12003	1	PATENT ABSTRACTS OF	
Fink, R	12002	1		US 6352791 B1  HCA	
Hayoz, P	12004	1		WO 2004077885 A  HCA	
Hoechst Ag	11996	1		DE 4446818 A1  HCA	
Hu, N	12001	1		US 6229012 B1  HCA	
Jean-Hugues, F	12004	169	1762	JOURNAL OF ORGANIC C	
Nishi, T	12002	1		US 2002034659 A1  HCA	
Toray Ind Inc	12003	1		JP 2003086381 A  HCA	
Wu, C	12002	181	1577	APPLIED PHYSICS LETT HCA	
Xerox Corporation	12004	1		EP 1385221 A  HCA	
OS.CITING REF COUNT:	4	THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (9 CITINGS)			

=> D L66 1-31 IBIB ABS HITSTR HITIND RETABLE

L66 ANSWER 1 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 143:376222 HCA Full-text  
 TITLE: Organic light emitting diode  
 containing a novel Ir complex as a  
 phosphorescent emitter  
 INVENTOR(S): Cheng, Chien-Hong; Duan, Jiun-Pey; Rayabarapu, Dinesh  
 Kumar; Jennifer, Betty Marie  
 PATENT ASSIGNEE(S): Cheng, Chien-Hong, Taiwan  
 SOURCE: U.S. Pat. Appl. Publ., 25 pp.  
 CODEN: USXEC0  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

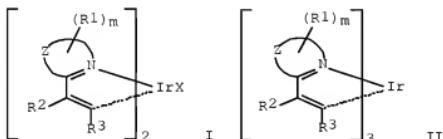
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050227109	A1	20051013	US 2004-822647	20040413 <--
US 7320834	B2	20080122		
TW 232704	B	20050511	TW 2003-120288	20030724 <--
KR 2005012132	A	20050131	KR 2004-55376	20040716 <--
KR 853701	B1	20080825		

PRIORITY APPLN. INFO.: TW 2003-120288 A 20030724 &lt;--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:376222

GI



AB Organic light-emitting diodes are described which employ an electroluminescent medium which comprises a phosphorescent Ir complex described by general formula I or II (X = a monoanionic bidentate ligand; Z = an atomic moiety capable of forming a nitrogen-containing heterocyclic group; R1 = H, halo, C1-6 alkyl, halogen-substituted C1-6 alkyl, C1-6 alkoxy, Ph-C1-6 alkyl, amino, and aryl; m = 0 or any pos. integer determined by the ring size of the nitrogen-containing heterocyclic group; R2 and R3 = independently selected H, halogen, C1-6 alkyl, halogen-substituted C1-6 alkyl, C1-6 alkoxy, Ph-C1-6 alkyl, amino, aryl, and heterocyclic aryl).

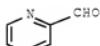
IT 1121-60-4, 2-Pyridinecarboxaldehyde 1122-62-9

10025-87-3, Phosphoryl chloride

(organic light-emitting diodes employing iridium complexes as phosphorescent emitters)

RN 1121-60-4 HCA

CN 2-Pyridinecarboxaldehyde (CA INDEX NAME)



RN 1122-62-9 HCA

CN Ethanone, 1-(2-pyridinyl)- (CA INDEX NAME)



RN 10025-87-3 HCA  
 CN Phosphoric trichloride (CA INDEX NAME)



INCL 428690000; X42-891.7; X31-350.4; X31-350.6; X25-710.2  
 IPCI H01L0051-54 [I,A]; H01L0051-50 [I,C\*]; C09K0011-06 [N,A]  
 IPCR H05B0033-14 [I,C\*]; H05B0033-14 [I,A]; H01L0051-50 [I,C]; H01L0051-50  
 [I,A]; H01L0051-54 [I,A]; C09K0011-06 [I,C\*]; C09K0011-06 [I,A];  
 H05B0033-12 [I,C\*]; H05B0033-20 [I,A]; H05B0033-22 [I,C\*]; H05B0033-22  
 [I,A]  
 NCL 428/690.000; 257/102.000; 313/504.000; 313/506.000; 428/917.000;  
 257/E51.044  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 76, 78  
 ST org light emitting diode iridium complex  
 phosphorescent emitter  
 IT Phosphorescent substances  
 (organic light-emitting diodes employing iridium  
 complexes as phosphorescent emitters)  
 IT Electroluminescent devices  
 (organic; organic light-emitting diodes employing iridium  
 complexes as phosphorescent emitters)  
 IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 123847-85-8, NPB  
 192198-85-9, TPBI  
 (electron-transporting material; organic light-emitting  
 diodes employing iridium complexes as phosphorescent  
 emitters)  
 IT 185690-41-9, 4,4',4'''-Tris(2-naphthylphenylamino)triphenylamine  
 (hole injection modification layer containing; organic light-  
 emitting diodes employing iridium complexes as  
 phosphorescent emitters)  
 IT 4733-39-5, BCP 146162-54-1, BAq  
 (hole-blocking layer containing; organic light-  
 emitting diodes employing iridium complexes as  
 phosphorescent emitters)  
 IT 19287-68-4 58328-31-7  
 (hole-transporting material; organic light-emitting  
 diodes employing iridium complexes as phosphorescent  
 emitters)  
 IT 844818-66-2P 844818-67-3P 844818-68-4P 844818-69-5P 844818-70-8P  
 844818-71-9P 844818-72-0P 844818-73-1P 844818-74-2P 844818-75-3P  
 (organic light-emitting diodes employing iridium  
 complexes as phosphorescent emitters)  
 IT 75-03-6, Ethyl iodide 100-39-0 109-46-2, 2-Bromopyridine 536-74-3,  
 Phenylacetylene 603-35-0, Triphenylphosphine, reactions 612-62-4  
 615-20-3 634-47-9 688-73-3, Tributyltin hydride 1121-60-4,  
 2-Pyridinecarboxaldehyde 1122-62-9 1532-72-5, Isoquinoline  
 N-oxide 3510-66-5 10025-83-9, Iridium trichloride 10025-87-3  
 , Phosphoryl chloride 15727-65-8 52248-74-5 52334-81-3 59066-57-8,  
 1-((E)-2-Phenyl-1-ethenyl)isoquinoline  
 (organic light-emitting diodes employing iridium  
 complexes as phosphorescent emitters)

IT 538-49-8P 4736-60-1P, Triphenylethylphosphonium iodide 7370-19-6P  
 13673-46-6P 19493-44-8P, 1-Chloroisouquinoline 38101-69-8P,  
 2-((E)-2-Phenyl-1-ethenyl)quinoline 53500-07-5P 59066-61-4P  
 66680-88-4P 84586-45-8P, 4-Methyl-2-((E)-2-phenyl-1-ethenyl)quinoline  
 844698-46-0P  
 (organic light-emitting diodes employing iridium  
 complexes as phosphorescent emitters)

## RETABLE

Referenced Author (RAU)	Year	VOL	PG	Referenced Work (RPG)	Referenced (RWK)	File
Deaton	2005	1	1	US 20050123792 A1		HCA
Deaton	2005	1	1	US 20050123798 A1		HCA
Hamada	2003	1	1	US 20030194580 A1		HCA
Hamada	2006	1	1	US 7022422 B2		HCA
Lussier	2005	1	1	US 20050123795 A1		HCA
Sano	1995	1	1	US 5432014 A		HCA
Sato	2002	1	1	US 20020125818 A1		HCA
Takiguchi	2002	1	1	US 20020100906 A1		HCA
Takiguchi	2004	1	1	US 6797980 B2		HCA
Thompson	2002	1	1	US 20020034656 A1		HCA

L66 ANSWER 2 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 142:490160 HCA [Full-text](#)

TITLE: Light emitting devices and

materials for use in the devices

INVENTOR(S): Wudl, Fred; Mitsumori, Teruyuki; Sato, Yoshiharu;

Sato, Hideki; Shioya, Takeshi

PATENT ASSIGNEE(S): University of California, Los Angeles UCLA, USA;  
 Mitsubishi Chemical Corporation

SOURCE: PCT Int. Appl., 20 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005048315	A2	20050526	WO 2004-US37843	20041110 <--
WO 2005048315	A3	20060706		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

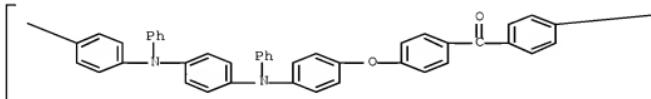
PRIORITY APPLN. INFO.: US 2003-518986P P 20031110 <--  
 OTHER SOURCE(S): MARPAT 142:490160

AB Light-emitting materials represented by the general formula I, II, III and IV  
 (Z1 = aromatic ring having a nitrogen atom; Z2 = fused ring; M = Ir, Pt or Pd)  
 are described. An organic light-emitting device comprising the light-emitting layer is also described.

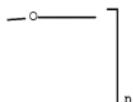
IT 533935-00-1

(hole injection material; light emitting devices  
and materials for use in devices)  
 RN 533935-00-1 HCA  
 CN Poly[oxy-1,4-phenylene carbonyl-1,4-phenyleneoxy-1,4-phenylene(phenylimino)-  
1,4-phenylene(phenylimino)-1,4-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IPCI C07D0221-00 [I,C]; C07D0221-18 [I,A]  
 IPCR C07D0221-00 [I,C]; C07D0221-18 [I,A]; C09K0011-06 [I,C\*]; C09K0011-06  
 [I,A]; H01L [I,S]; H01L0051-00 [I,C\*]; H01L0051-00 [I,A]; H01L0051-50  
 [N,C\*]; H01L0051-50 [N,A]; H05B0033-14 [I,C\*]; H05B0033-14 [I,A]  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 22, 76  
 ST light emitting material device LED  
 IT Electroluminescent devices  
 Luminescent substances  
 Phosphorescent substances  
 (light emitting devices and materials for use in  
 devices)  
 IT 157077-25-3  
 (hole blocking material; light  
 emitting devices and materials for use in devices)  
 IT 1109-15-5 533935-00-1  
 (hole injection material; light emitting devices  
 and materials for use in devices)  
 IT 147-14-8, Copper phthalocyanine 2085-33-8, AlQ3 123847-85-8  
 811811-13-9  
 (light emitting devices and materials for use in  
 devices)

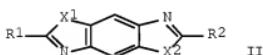
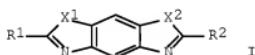
RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RPG)	Referenced (RWK)	File
Anon					US 6303238 B1		HCA

L66 ANSWER 3 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 142:363426 HCA [Full-text](#)  
 TITLE: Organic electroluminescent devices with high  
 luminance, durability, and emission efficiency and  
 materials therefor  
 INVENTOR(S): Onikubo, Shunichi; Enokida, Toshio; Suda, Yasumasa;  
 Toba, Yasumasa; Kimura, Yasunori; Kaneko, Tetsuya  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005082703	A	20050331	JP 2003-316325	20030909 <--
JP 4306379	B2	20090729	JP 2003-316325	20030909 <--
PRIORITY APPLN. INFO.:				
OTHER SOURCE(S):	MARPAT	142:363426		

GI



AB The materials contain (A) heterocyclic compds. wherein plural N-containing rings are fused directly or via other carbon or heterocyclic rings and (B) phosphorescent substances (e.g., organic compds., Ir or Pt complexes with organic ligands). The compds. A may be I or II [X1, X2 = O, S, NR3; R1-R3 = (cyclo)alkyl, aryl, heterocyclic]. In organic EL devices having emitting layers or those including plural organic layers between a pair of electrodes,  $\geq 1$  of the layers contain the above materials. The devices may have electron-injecting layers between cathodes and the emitting layers, hole-blocking layers between the electron-injecting layers and the emitting layers, and/or hole-injecting layers between anodes and the emitting layers.

IT 4051-56-3 31671-77-9, Anthraldehyde  
 (in preparation of phosphors; phosphors containing benzobisthiazole-like fused

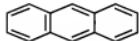
heterocyclic compds. for durable organic EL devices with high emission efficiency)

RN 4051-56-3 HCA

CN Benzamide, N,N-diphenyl- (CA INDEX NAME)



RN 31671-77-9 HCA  
 CN Anthracenecarboxaldehyde (CA INDEX NAME)



D1-CHO

IPCI C09K0011-06 [I,A]; H01L0051-50 [I,A]  
 IPCR C09K0011-06 [I,A]; C09K0011-06 [I,C\*]; H05B0033-14 [I,A]; H05B0033-14 [I,C\*]; H01L0051-50 [I,C\*]; H01L0051-50 [I,A]  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST org electroluminescent emission efficiency durability luminance;  
 EL phosphor benzobisthiazole benzobisoxazole benzobisisimidazole;  
 phosphorescent iridium platinum complex doped EL  
 phosphor  
 IT Electroluminescent devices  
 (organic; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT Phosphors  
 (phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT 14187-14-5 31248-39-2 94928-86-6 149005-33-4 343978-94-9  
 376367-93-0 848902-76-1  
 (dopants, emitting layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT 2085-33-8 395644-78-7  
 (electron-injecting layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT 65181-78-4  
 (emitting layers, hole-injecting layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT 905-62-4, 2,5-Bis(1-naphthyl)-1,3,4-oxadiazole  
 (emitting layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT 219596-73-3P 219596-76-6P 219597-18-9P  
 (emitting layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)  
 IT 13399-13-8 133531-74-5 219596-84-6 219596-97-1 219597-01-0  
 219597-22-5 219597-29-2 219597-32-7 219597-58-7 848941-49-1  
 848941-50-4 848941-51-5 848941-52-6 848941-53-7 848941-54-8  
 (emitting layers; phosphors containing benzobisthiazole-like fused

heterocyclic compds. for durable organic EL devices with high emission efficiency)

IT 1662-01-7, Bathophenanthroline 4733-39-5, Bathocuproin 146162-49-4  
150405-69-9, 3-(4-Biphenyl)-4-phenyl-5-(4-tert-butylphenyl)-1,2,4-triazole 188049-37-8 221554-51-4 848902-77-2 848902-78-3  
(hole-blocking layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)

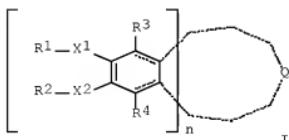
IT 147-14-8, Copper phthalocyanine 123847-85-8 182507-83-1 185690-39-5,  
4,4',4''-Tris[N-(1-naphthyl)-N-phenylamino]triphenylamine  
(hole-injecting layers; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)

IT 4051-56-3 16523-31-2 31671-77-9, Anthraldehyde  
848941-55-9  
(in preparation of phosphors; phosphors containing benzobisthiazole-like fused heterocyclic compds. for durable organic EL devices with high emission efficiency)

L66 ANSWER 4 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 142:363425 HCA Full-text  
 TITLE: Organic electroluminescent devices with high luminance, durability, and emission efficiency and materials therefor  
 INVENTOR(S): Onikubo, Shunichi; Enokida, Toshio; Suda, Yasumasa;  
 Toba, Yasumasa; Kimura, Yasunori; Kaneko, Tetsuya  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 54 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005082702	A	20050331	JP 2003-316324	20030909 <--
OTHER SOURCE(S):	MARPAT	142:363425	JP 2003-316324	20030909 <--

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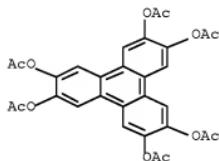
AB The materials contain compds. having I units [ $X_1, X_2 = O, CO_2, OCO; R_1, R_2 = (cyclo)alkyl, aryl, heterocyclic; R_3, R_4 = H, halo, CN, NO_2, alkyl(oxy), aryl(oxy), alkylthio, arylthio, amino, acyl, heterocyclic; Q = fused ring structure or linking group forming rings with the units; n = 2-6] and phosphorescent substances (e.g., organic compds., Ir or Pt complexes with organic ligands). In organic EL devices having emitting layers (A) or A- including plural organic layers between a pair of electrodes,  $\geq 1$  of the layers contain the above materials. The devices may have hole-injecting layers (B) between anodes and A, electron-blocking layers between A and B, electron-injecting layers (C) between cathodes and A, and/or hole-blocking layers between C and A.$

IT 32829-08-6 848940-24-9

(emitting layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

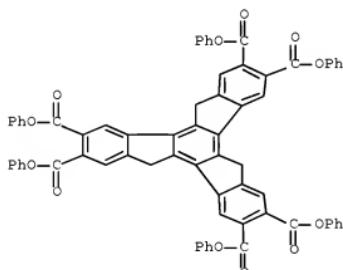
RN 32829-08-6 HCA

CN 2,3,6,7,10,11-Triphenylenehexol, 2,3,6,7,10,11-hexaacetate (CA INDEX NAME)



RN 848940-24-9 HCA

CN 5H-Tribenzol[a,f,k]trindene-2,3,7,8,12,13-hexacarboxylic acid, 10,15-dihydro-, 2,3,7,8,12,13-hexaphenyl ester (CA INDEX NAME)



IPCI C09K0011-06 [ICM,7]; H05B0033-14 [ICS,7]; H05B0033-22 [ICS,7]

IPCR C09K0011-06 [I,A]; C09K0011-06 [I,C\*]; H05B0033-14 [I,A]; H05B0033-14 [I,C\*]; H05B0033-22 [I,A]; H05B0033-22 [I,C\*]

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related

Properties)

ST org electroluminescent emission efficiency durability luminance; fused alkoxybenzene acyloxybenzene benzene carboxylic acid EL phosphor; alkoxytriphenylene phosphor iridium platinum complex doped EL

IT Phosphors  
(fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT Electroluminescent devices  
(organic; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 14187-14-5 31248-39-2 94928-86-6 149005-33-4 344796-24-3  
376367-93-0 848902-76-1  
(dopants, emitting layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 208939-07-5 848940-26-1  
(electron-blocking layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 2085-33-8 23467-27-8 395644-78-7  
(electron-injecting layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 905-62-4, 2,5-Bis(1-naphthyl)1,3,4-oxadiazole 58328-31-7, CBP  
65181-78-4 192198-85-9  
(emitting layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 23417-07-4 32829-08-6 32829-11-1 134025-08-4 134025-15-3  
134656-41-0 162281-25-6 208938-92-5 208939-01-9 208939-08-6  
208939-12-2 208939-44-0 848940-19-2 848940-20-5 848940-22-7  
848940-23-8 848940-24-9 848940-25-0 848940-28-3  
(emitting layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 808-57-1P  
(fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 1662-01-7, Bathophenanthroline 4733-39-5, Bathocuprין 146162-49-4  
146162-54-1 150405-69-9, 3-(4-Biphenyl)-4-phenyl-5-(4-tert-butylphenyl)-1,2,4-triazole 221554-51-4 848902-77-2 848902-78-3  
(hole-blocking layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 208939-55-3 848940-21-6 848940-27-2  
(hole-injecting and electron-blocking layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 147-14-8, Copper phthalocyanine 123847-85-8 182507-83-1 185690-39-5,  
4,4',4''-Tris[N-(1-naphthyl)-N-phenylamino]triphenylamine  
(hole-injecting layers; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)

IT 91-16-7, 1,2-Dimethoxybenzene

(in preparation of phosphors; fused aromatic compound-containing phosphors for organic EL devices with high luminance, durability, and emission efficiency)  
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L66 ANSWER 5 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 142:269139 HCA [Full-text](#)  
 TITLE: Photoconductive imaging members  
 INVENTOR(S): Wu, Jin; Tong, Yuhua; Lin, Liang-bih; Hu, Nan-xing;  
 Ferrarese, Linda L.; Duff, James M.; Qi, Yu  
 PATENT ASSIGNEE(S): Xerox Corporation, USA  
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.  
 CODEN: USXKCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050042533	A1	20050224	US 2003-647055	20030822 <--
US 6946226	B2	20050920		
CN 1584746	A	20050223	CN 2004-10057866	20040820 <--
JP 2005070786	A	20050317	JP 2004-242148	20040823 <--
JP 4541801	B2	20100908		

PRIORITY APPLN. INFO.: US 2003-647055 A 20030822 <--  
 ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

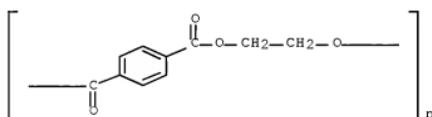
OTHER SOURCE(S): MARPAT 142:269139

AB A photoconductive imaging member comprised of a supporting substrate, a hole blocking layer thereover, a photogenerating layer, and a charge transport layer, and wherein the hole blocking layer is comprised of particles chemical attached on the surface of an electron transport component.

IT 25038-59-9, PET, uses  
 (hole blocking layer of electrophotog.  
 photoreceptor)

RN 25038-59-9 HCA

CN Poly(oxy-1,2-ethanediylloxycarbonyl-1,4-phenylenecarbonyl) (CA INDEX NAME)



INCL 430064000; 430058800; 430059400; 430065000

IPCI G03G0005-14 [ICM,7]

IPCR G03G0005-043 [I,C\*]; G03G0005-047 [I,A]; G03G0005-05 [I,C\*]; G03G0005-05 [I,A]; G03G0005-06 [I,C\*]; G03G0005-06 [I,A]; G03G0005-14 [I,C\*]; G03G0005-14 [I,A]

NCL 430/064.000; 430/058.800; 430/059.400; 430/065.000; 430/058.250

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

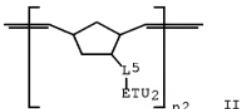
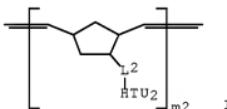
IT 574-93-6D, Phthalocyanine, derivative 1344-28-1, Alumina, uses 7429-90-5,

Aluminum, uses 12679-43-5D, Naphthaquinone, derivative, carboxybenzyl 13463-67-7, Titania, uses 25038-59-9, PET, uses 61372-93-8 65181-78-4 93376-18-2 845784-80-7 845784-81-8 (hole blocking layer of electrophotog. photoreceptor)

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (13 CITINGS)

L66 ANSWER 6 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 142:165272 HCA Full-text  
 TITLE: Block copolymers for organic  
 electroluminescent (EL) device and  
 its display, illumination, and light source  
 INVENTOR(S): Kawakami, Akira; Kita, Hiroshi; Ogino, Kenji  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 56 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005015508	A	20050120	JP 2003-177859	20030623 <--
JP 4300902	B2	20090722	JP 2003-177859	20030623 <--
PRIORITY APPLN. INFO.:				
GI				



AB The block copolymers comprise (A) block components of repeating units having hole-transporting units (HTU), (B) block components of repeating units having electron-transporting units (ETU), and (C) repeating units having phosphorescent units. Preferably, the block A is represented by the general formula  $[CHR1CR2(L1HTU1)]m1$ , I, or  $[O(CR8R9)11CR5(L3HTU3)]m3$  (HTU1-HTU3 = hole-transporting moiety; R1-R5 = H, substituent; L1-L3 = linking group, bond;  $m \geq 3$  integer; 11 = 1, 2, 3) and the block B is represented by the general formula  $[CHR6CR7(L4ETU1)]n1$ , II, or  $[O(CR8R9)12CR10(L6ETU3)]n3$  (ETU1-ETU3 = electron-transporting moiety; R6-R10 = H, substituent; L4-L6 = linking group, bond; 11-n3  $\geq 3$  integer; 12 = 1, 2, 3). Preferably, the HTU comprise triphenylamine units and the ETU have F or F-containing substituents. Preferably, the surface free energy of the monomer forming HTU-containing repeating units is larger than that of the monomers of the ETU-containing repeating units and these monomers are incompatible to each other. Preferably, the block copolymers are prepared by atom.-transfer radical polymerization. Preferably,  $\geq 1$  of the block A contains hydrolyzable silyl groups, more preferably, trialkoxysilyl groups, and also contains dialkylamino groups. The organic EL device contains the A-B-C block copolymers in  $\geq 1$  of the organic

layers provided between a cathode and an anode. In another alternative, the organic EL device contains A-B block copolymers and phosphorescent compds. The organic EL device has high emission efficiency, long service life, and high productivity.

IT 830318-25-7P 830318-29-1P  
 (block copolymers for organic EL device for display,  
 illumination, and light source)

RN 830318-25-7 HCA

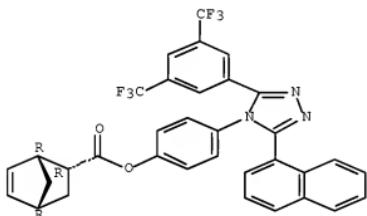
CN Iridium, bis[3,5-difluoro-2-(2-pyridinyl- $\kappa$ N)phenyl- $\kappa$ C](4-ethenyl-2-pyridinecarboxylato- $\kappa$ N1,  $\kappa$ O2)-, polymer with  
 rel-4-[3-[3,5-bis(trifluoromethyl)phenyl]-5-(1-naphthalenyl)-4H-1,2,4-triazol-4-yl]phenyl (1R,2R,4R)-bicyclo[2.2.1]hept-5-ene-2-carboxylate and  
 rel-4-(9H-carbazol-9-yl)phenyl (1R,2R,4R)-bicyclo[2.2.1]hept-5-ene-2-carboxylate, block (9CI) (CA INDEX NAME)

CM 1

CRN 830318-24-6

CMF C34 H23 F6 N3 O2

Relative stereochemistry.

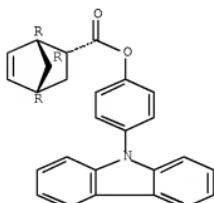


CM 2

CRN 830318-23-5

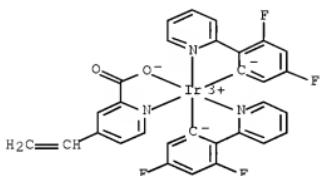
CMF C26 H21 N O2

Relative stereochemistry.



CM 3

CRN 830318-19-9  
 CMF C30 H18 F4 Ir N3 O2  
 CCI CCS

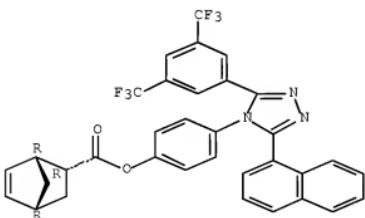


RN 830318-29-1 HCA  
 CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid,  
 4-[3-[3,5-bis(trifluoromethyl)phenyl]-5-(1-naphthalenyl)-4H-1,2,4-triazol-  
 4-yl]phenyl ester, (1R,2R,4R)-rel-, polymer with  
 (1R,2R,4R)-rel-4-(9H-carbazol-9-yl)phenyl  
 bicyclo[2.2.1]hept-5-ene-2-carboxylate, block (9CI) (CA INDEX NAME)

CM 1

CRN 830318-24-6  
 CMF C34 H23 F6 N3 O2

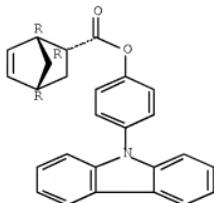
Relative stereochemistry.



CM 2

CRN 830318-23-5  
 CMF C26 H21 N O2

Relative stereochemistry.



IPCI C08F0297-00 [I,A]; C09K0011-06 [I,A]; H01L0051-50 [I,A]  
 IPCR C08F0297-00 [I,A]; C08F0297-00 [I,C\*]; C08G0065-00 [I,C\*]; C08G0065-02  
     [I,A]; C09K0011-06 [I,A]; C09K0011-06 [I,C\*]; H05B0033-14 [I,A];  
     H05B0033-14 [I,C\*]; H05B0033-22 [I,A]; H05B0033-22 [I,C\*]; H01L0051-50  
     [I,C\*]; H01L0051-50 [I,A]  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
     Properties)  
 ST Section cross-reference(s): 38, 74  
 hole transporting unit block copolymer  
 electroluminescent device; electron transporting unit block  
 copolymer electroluminescent device; phosphorescent  
 unit block copolymer electroluminescent device; light source org  
 electroluminescent device; illumination org  
 electroluminescent device; org electroluminescent  
 display block copolymer  
 IT Light sources  
     (block copolymers for organic EL device for display,  
     illumination, and light source)  
 IT Electroluminescent devices  
     (displays; block copolymers for organic EL device for display,  
     illumination, and light source)  
 IT Luminescent screens  
     (electroluminescent; block copolymers for organic EL  
     device for display, illumination, and light source)  
 IT Light  
     (fluorescent; block copolymers for organic EL device for  
     display, illumination, and light source)  
 IT Electroluminescent devices  
     (organic; block copolymers for organic EL device for display,  
     illumination, and light source)  
 IT 828940-06-3P 830318-16-6P 830318-18-8P 830318-20-2P 830318-21-3P  
     830318-22-4P 830318-25-7P 830318-26-8P 830318-27-9P  
     830318-28-0P 830318-29-1P  
     (block copolymers for organic EL device for display,  
     illumination, and light source)  
 IT 94928-86-6 344796-22-1 344796-24-3 376367-93-0  
     (phosphor; block copolymers for organic EL device for display,  
     illumination, and light source)  
 L66 ANSWER 7 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 141:358036 HCA [Full-text](#)  
 TITLE: Photoconductive imaging members with hole blocking  
     layer from oxide, phenolic compound and phenolic resin  
 INVENTOR(S): Wu, Jin; Hwang, Jennifer Y.; Lin, Liang-bih; Foley,

PATENT ASSIGNEE(S):

Geoffrey M. t.; Wilbert, John J.  
Xerox Corporation, USA  
U.S. Pat. Appl. Publ., 11 pp.

SOURCE:

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040202947	A1	20041014	US 2003-410777	20030409 <--
US 6967069	B2	20051122		

PRIORITY APPLN. INFO.:

US 2003-410777

20030409 &lt;--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB In a photoconductive imaging member including a hole blocking layer, a photogenerating layer, and a charge transport layer, the hole blocking layer contains, for example, a metal oxide dispersed in an in situ formed inorg./organic network. The inorg. component is preferably silica, titania or zirconia, and the organic component is a mixture of a phenolic compound and a phenolic resin, wherein the phenolic compound can contain, for example, at least two phenolic group. The SiO<sub>2</sub>, TiO<sub>2</sub> or ZrO<sub>2</sub> may be formed by hydrolysis of a precursor during curing of the hole blocking layer composition

IT 80-09-1, Bisphenol S 25085-75-0  
(hole blocking layer dispersion containing;  
photoconductive imaging members with hole blocking  
layer from oxide, phenolic compound and phenolic resin)

RN 80-09-1 HCA

CN Phenol, 4,4'-sulfonylbis- (CA INDEX NAME)



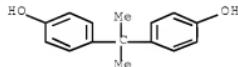
RN 25085-75-0 HCA

CN Formaldehyde, polymer with 4,4'-(1-methylethylidene)bis[phenol] (CA INDEX NAME)

CM 1

CRN 80-05-7

CMF C15 H16 O2



CM 2

CRN 50-00-0

CMF C H2 O

H<sub>2</sub>C=O

INCL 430059400; 430065000; 430058800  
 IPCI G03G0005-14 [ICM,7]  
 IPCR G03G0005-05 [I,C\*]; G03G0005-05 [I,A]; G03G0005-14 [I,C\*]; G03G0005-14 [I,A]  
 NCL 430/059.400; 430/058.800; 430/065.000; 430/131.000  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 38  
 IT 80-09-1, Bisphenol S 123-31-9, 1,4-Benzenediol, uses 154-23-4,  
 Catechin 1314-23-4, Zirconia, uses 1478-61-1, 4,  
 4'-(Hexafluoroisopropylidene)diphenol 7631-86-9, Silica, uses 9039-25-2, Cresol-formaldehyde-phenol copolymer 13463-67-7, Titania, uses 25085-75-0 28453-20-5,  
 Formaldehyde-p-tert.-butylphenol-phenol copolymer 68039-55-4,  
 Ammonia-cresol-formaldehyde-phenol copolymer 741713-98-4, VARCUM 29159  
 (hole blocking layer dispersion containing;  
 photoconductive imaging members with hole blocking  
 layer from oxide, phenolic compound and phenolic resin)

## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R V L)	PG (R PG)	Referenced Work (R WK)	Referenced File
Anon	1988			JP 63-284560	HCA
Itoh	12003			US 20030099889 A1	HCA
Keoshkerian	1996			US 5482811 A	HCA
Listigovers	1996			US 5521043 A	HCA
Mayo	1995			US 5473064 A	HCA
Murti	2000			US 6015645 A	HCA
Ong	2001			US 6287737 B1	HCA
Stolka	1981			US 4265990 A	HCA
Wu Jin	2003			US 10369816	
Yuh	12001			US 6261729 B1	HCA

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD  
 (4 CITINGS)

L66 ANSWER 8 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 141:215563 HCA [Full-text](#)

TITLE: Electrophotographic photoconductor for copying and printing with excellent photoinduced discharge characteristics, cyclic and environmental stability

INVENTOR(S): Wu, Jin; Lin, Liang-Bih; Hwang, Jennifer Y.

PATENT ASSIGNEE(S): Xerox Corporation, USA

SOURCE: U.S. Pat. Appl. Publ., 11 pp.  
 CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040161684	A1	20040819	US 2003-369816	20030219 <--
US 6913863	B2	20050705		

JP 2004252460	A 20040909	JP 2004-42366	20040219 <--
JP 4263637	B2 20090513		
US 20050186493	A1 20050825	US 2005-90532	20050325 <--
US 7001700	B2 20060221		

PRIORITY APPLN. INFO.: US 2003-369816 A 20030219 <--  
 ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

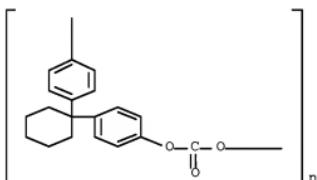
OTHER SOURCE(S): MARPAT 141:215563

AB Electrophotog. photoconductor is described that has excellent photoinduced discharge characteristics, cyclic and environmental stability and acceptable charge deficient spot levels arising from dark injection of charge carriers. The photoconductor includes a mech. robust and solvent resistant polymeric hole blocking layer, a photogenerating layer, and a charge transport layer. The hole blocking layer that cures rapidly during fabrication and prevents or minimizes dark injection contains phenolic binders. Thus, the hole blocking layer contains a metal oxide and a phenolic compound/ phenolic resin blend, or a low. mol. weight phenolic resin/phenolic resin blend.

IT 25135-52-8, PCZ-400  
 (charge-transport layer binder; electrophotog. photoconductor  
 hole blocking layer containing metal oxide and phenolic  
 compound/ phenolic resin blend or blend of phenolic resins)

RN 25135-52-8 HCA

CN Poly(oxycarbonyloxy-1,4-phenylenecyclohexylidene-1,4-phenylene) (CA INDEX NAME)



IT 80-09-1, Bisphenol S  
 (hole blocking layer; electrophotog. photoconductor  
 hole blocking layer containing metal oxide and phenolic  
 compound/ phenolic resin blend or blend of phenolic resins)

RN 80-09-1 HCA

CN Phenol, 4,4'-sulfonylbis- (CA INDEX NAME)



IT 9005-09-8, VMCH  
 (photogenerating layer binder; electrophotog. photoconductor  
 hole blocking layer containing metal oxide and phenolic  
 compound/ phenolic resin blend or blend of phenolic resins)

RN 9005-09-8 HCA

CN 2-Butenedioic acid (2Z)-, polymer with chloroethene and ethenyl acetate

(CA INDEX NAME)

CM 1

CRN 110-16-7  
CMF C4 H4 O4

Double bond geometry as shown.



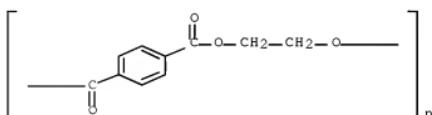
CM 2

CRN 108-05-4  
CMF C4 H6 O2

CM 3

CRN 75-01-4  
CMF C2 H3 Cl

IT 25038-59-9, Poly(ethylene terephthalate), uses  
 (substrate; electrophotog. photoconductor having excellent photoinduced  
 discharge characteristics and cyclic stability containing hole  
 blocking layer with phenolic binders)  
 RN 25038-59-9 HCA  
 CN Poly(oxy-1,2-ethanediylloxycarbonyl-1,4-phenylenecarbonyl) (CA INDEX NAME)



INCL 430065000; 430058800; 430059400; 430059500; 430059100

IPCI G03G0005-14 [ICM,7]

IPCR G03G0005-10 [I,C\*]; G03G0005-10 [I,A]; G03G0005-14 [I,C\*]; G03G0005-14 [I,A]

NCL 430/065.000; 430/058.800; 430/059.100; 430/059.400; 430/059.500;  
 430/123.400; 430/123.430; 430/131.000  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 IT 25135-52-8, PCZ-400  
 (charge-transport layer binder; electrophotog. photoconductor  
 hole blocking layer containing metal oxide and phenolic  
 compound/ phenolic resin blend or blend of phenolic resins)  
 IT 80-05-7, 4,4'-Isopropylidenediphenol, uses 80-09-1, Bisphenol S  
 108-46-3, 1,3-Benzenediol, uses 620-92-8, Bis(4-hydroxyphenyl)methane  
 843-55-0, Bisphenol Z 1478-61-1, 4,4'-(Hexafluoroisopropylidene)diphenol  
 2081-08-5, 4,4'-Ethylidenediphenol 2167-51-3, Bisphenol P 7631-86-9,  
 Silica, uses 13392-26-2 13595-25-0, Bisphenol M 741713-98-4, Varicum  
 29159  
 (hole blocking layer; electrophotog. photoconductor  
 hole blocking layer containing metal oxide and phenolic  
 compound/ phenolic resin blend or blend of phenolic resins)  
 IT 9005-09-8, VMCH  
 (photogenerating layer binder; electrophotog. photoconductor  
 hole blocking layer containing metal oxide and phenolic  
 compound/ phenolic resin blend or blend of phenolic resins)  
 IT 25038-59-9, Poly(ethylene terephthalate), uses  
 (substrate; electrophotog. photoconductor having excellent photoinduced  
 discharge characteristics and cyclic stability containing hole  
 blocking layer with phenolic binders)

## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R V L)	PG (R PG)	Referenced Work (R WK)	Referenced File
Anon	1988			JP 63284560 A	HCA
Diamond	12002		174	Handbook of Imaging	
Hor	1985			US 4555463 A	HCA
Hor	1986			US 4587189 A	HCA
Keoshkerian	1996			US 5482811 A	HCA
Listigovers	1996			US 5521043 A	HCA
Mayo	1995			US 5473064 A	HCA
Murti	12000			US 6015645 A	HCA
Nogami	1996			US 5561022 A	HCA
Ong	12001			US 6287737 B1	HCA
Stolka	11981			US 4265990 A	HCA
Wehelie	12000			US 6156468 A	CAPLUS
Wehelie	12001			US 6255027 B1	
Yashiki	11986			US 4579801 A	HCA
Yuh	11990			US 4921769 A	HCA
Yuh	12001			US 6177219 B1	HCA

OS.CITING REF COUNT: 46 THERE ARE 46 CAPLUS RECORDS THAT CITE THIS  
 RECORD (48 CITINGS)

L66 ANSWER 9 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 141:182064 HCA [Full-text](#)

TITLE: Organic electroluminescent device showing stable  
 operation for flat panel display

INVENTOR(S): Yoneyama, Tomio; Sato, Itsuki; Sato, Hideki

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.

CODEN: JKXXAF

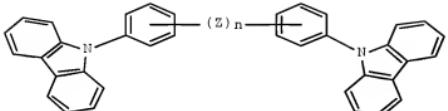
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004220931	A	20040805	JP 2003-7300	20030115 <--
JP 4325197	B2	20090902		
PRIORITY APPLN. INFO.:			JP 2003-7300	20030115 <--
OTHER SOURCE(S):		MARPAT 141:182064		
GI				



I

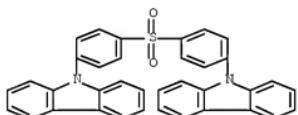
AB The title electroluminescent device includes a compound represented by I ( $Z =$  divalent connection group;  $n = 0-5$ ) in a pos. hole blocking layer. The compds. were synthesized in the examples.

IT 733038-89-6P

(preparation of pos. hole blocking material for organic electroluminescent device showing stable operation for flat panel display)

RN 733038-89-6 HCA

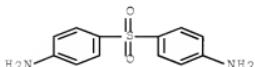
CN 9H-Carbazole, 9,9'-(sulfonyldi-4,1-phenylene)bis- (9CI) (CA INDEX NAME)



IT 80-08-0, Bis(4-aminophenyl)sulfone  
(preparation of pos. hole blocking material for organic electroluminescent device showing stable operation for flat panel display)

RN 80-08-0 HCA

CN Benzenamine, 4,4'-sulfonylbis- (CA INDEX NAME)



IPCI H01L0051-50 [I,A]; C07D0403-10 [I,A]; C07D0403-12 [I,A]; C07D0403-00 [I,C\*]; C07D0413-10 [I,A]; C07D0413-00 [I,C\*]; C09K0011-06 [I,A]  
 IPCR C07D0403-00 [I,C\*]; C07D0403-10 [I,A]; C07D0403-12 [I,A]; C07D0413-00 [I,C\*]; C07D0413-10 [I,A]; C09K0011-06 [I,A]; C09K0011-06 [I,C\*];  
 H05B0033-14 [I,A]; H05B0033-14 [I,C\*]; H05B0033-22 [I,A]; H05B0033-22 [I,C\*]; H01L0051-50 [I,C]; H01L0051-50 [I,A]  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73  
 IT 733038-87-4P 733038-89-6P 733038-91-0P  
 (preparation of pos. hole blocking material for organic electroluminescent device showing stable operation for flat panel display)  
 IT 80-08-0, Bis(4-aminophenyl)sulfone 86-74-8, Carbazole 341-58-2, 4,4'-Diamino-2,2'-bis(trifluoromethyl)biphenyl 2425-95-8, 2,5-Bis(4-aminophenyl)-1,3,4-oxadiazole 7681-11-0, Potassium iodide, reactions  
 (preparation of pos. hole blocking material for organic electroluminescent device showing stable operation for flat panel display)  
 OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

L66 ANSWER 10 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 141:147906 HCA Full-text  
 TITLE: Organic light emitting diode device with organic hole transporting material and phosphorescent material  
 INVENTOR(S): Lee, Yung-Chih; Chen, Wei-Su; Liao, Chi-Chih; Lee, Jiun-Haw  
 PATENT ASSIGNEE(S): Ritdisplay Corp., Taiwan  
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

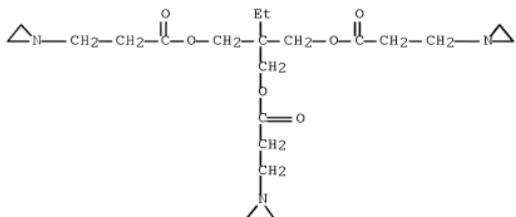
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040144974	A1	20040729	US 2003-248553	20030129 <--
US 6822257	B2	20041123		

PRIORITY APPLN. INFO.: US 2003-248553 20030129 <--  
 ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB An organic light emitting diode (OLED) device that comprises a substrate, an anode layer, a light-emitting layer, a hole blocking layer and a cathode layer. The anode layer is positioned over the substrate and the light-emitting layer is positioned over the anode layer. The hole blocking layer is positioned over the light-emitting layer and the cathode layer is positioned over the hole blocking layer. The light-emitting layer is an organic material layer consisted of hole transporting material and phosphorescent material and that the concentration of hole transporting material and phosphorescent material in the organic material layer is between 40% to 60% by weight

IT 52234-82-9, TAZ  
 (organic light emitting diode device with organic hole transporting material and phosphorescent material)  
 RN 52234-82-9 HCA  
 CN 1-Aziridinepropanoic acid, 1,1'-(2-[(3-(1-aziridinyl)-1-oxopropoxy)methyl]-

2-ethyl-1,3-propanediyl] ester (CA INDEX NAME)



INCL 257040000; 257082000; 257184000

IPCI H01L0035-24 [ICM,7]; H01L0035-12 [ICM,7,C\*]; H01L0051-00 [ICS,7]; H01L0027-15 [ICS,7]; H01L0031-12 [ICS,7]

IPCR H01L0051-05 [N,C\*]; H01L0051-30 [N,A]; H01L0051-50 [I,C\*]; H01L0051-50 [I,A]; H01L0051-00 [N,C\*]; H01L0051-00 [N,A]

NCL 257/040.000; 257/082.000; 257/184.000; 257/079.000; 257/098.000; 257/099.000; 257/102.000; 257/103.000

CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST org light emitting diode device hole transporting phosphorescent material; OLED hole transporting phosphorescent material

IT Electroluminescent devices

Hole (electron)

Phosphorescent substances

Phosphors

(organic light emitting diode device with organic hole transporting material and phosphorescent material)

IT 119-65-3D, Isoquinoline, iridium complexes 147-14-8, Copper phthalocyanine 841-73-6, BCP 2085-33-8 7429-90-5, Aluminum, uses 7439-88-5D, Iridium, isoquinoline complexes 7440-70-2, Calcium, uses 15082-28-7, PBD 37271-44-6 37275-76-6, Aluminum zinc oxide 50926-11-9, Indium tin oxide 52234-82-9, TAZ 65181-78-4, TPD 117944-65-7, Indium zinc oxide 123847-85-8, NPB 124729-98-2, m-MTDATA 146162-54-1, Balq 148896-39-3 192198-85-9, TPBI (organic light emitting diode device with organic hole transporting material and phosphorescent material)

RETABLE

Referenced (RAU)	Author (RPY)	Year (RVL)	VOL (RPG)	PG (RPG)	Referenced Work (RWK)	Referenced File
Adachi		2002			US 20020180347 A1	HCA
Adachi		2003			US 6573651 B2	HCA
Baldo		2000			US 6097147 A	HCA
Bellmann		2003			US 20030068525 A1	HCA
Hsieh		2003			US 20030162299 A1	HCA
Kwong		2002			US 20020074935 A1	HCA
Li		2003			US 20030138657 A1	HCA
Mishima		2002			US 20020096995 A1	HCA
Mori		2004			US 20040028944 A1	HCA
Sato		2003			US 20030218418 A9	HCA

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD  
(2 CITINGS)

L66 ANSWER 11 OF 31 HCA COPYRIGHT 2011 ACS on STN  
ACCESSION NUMBER: 140:189702 HCA Full-text  
TITLE: Polynuclear metal complexes as phosphorescence  
emitters in electroluminescent layer  
arrangements  
INVENTOR(S): Heuer, Helmut-Werner; Wehrmann, Rolf; Sautter, Armin  
PATENT ASSIGNEE(S): Germany  
SOURCE: U.S. Pat. Appl. Publ., 30 pp.  
CODEN: USXKCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040026663	A1	20040212	US 2003-635842	20030806 <--
EP 1394171	A1	20040303	EP 2003-17031	20030728 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CA 2436658	A1	20040209	CA 2003-2436658	20030806 <--
JP 2004075681	A	20040311	JP 2003-206477	20030807 <--
KR 2004014346	A	20040214	KR 2003-54907	20030808 <--
PRIORITY APPLN. INFO.:			DE 2002-10236538	A 20020809 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

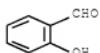
OTHER SOURCE(S): MARPAT 140:189702

AB Polynuclear metal complexes of the general formula  $(\text{LmMe-HL})_n\text{-XL}$ , a process for their preparation and their use as phosphorescence emitters in electroluminescent layer arrangements are described, where Me is a transition metal, L is a bidentate chelate-forming ligand, HL is a bidentate chelate-forming ligand which complexes the transition metal Me and is addnl. bonded to a linker XL, XL is an n-functional linker and is covalently bonded to n auxiliary ligands HL, n is an integer from 2 to 6 and m is an integer from 1 to 3.

IT 90-02-8, 2-Hydroxybenzaldehyde, reactions  
(polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)

RN 90-02-8 HCA

CN Benzaldehyde, 2-hydroxy- (CA INDEX NAME)



INCL 252301160; 428690000; 556018000  
IPC1 C09K0011-06 [ICM,7]; C07F0001-00 [ICS,7]  
IPC1 H05B0033-10 [I,C\*]; H05B0033-10 [I,A]; C07B0061-00 [I,C\*]; C07B0061-00 [I,A]; C07C0249-00 [I,C\*]; C07C0249-02 [I,A]; C07C0251-00 [I,C\*]; C07C0251-24 [I,A]; C07D0213-00 [I,C\*]; C07D0213-16 [I,A]; C07D0213-26 [I,A]; C07D0409-00 [I,C\*]; C07D0409-04 [I,A]; C07F0005-00 [I,C\*]; C07F0005-00 [I,A]; C07F0015-00 [I,A]; C09K0011-06 [I,C\*]; C09K0011-06 [I,A]; H01L0051-00 [I,C\*]; H01L0051-00 [I,A]; H01L0051-05 [I,C\*]; H01L0051-30 [I,A]; H01L0051-50 [I,C\*]; H01L0051-50

[I,A]  
NCL 252/301.160; 428/690.000; 556/018.000  
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76, 78  
ST polynuclear metal complex phosphorescence  
electroluminescent device  
IT Amines, uses  
(aromatic, hole-conducting layer; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Amines, uses  
(aryl, tertiary, polynuclear metal complex-doped; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Luminescent substances  
(electroluminescent; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Polymers, uses  
(polynuclear metal complex-doped; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Electroluminescent devices  
Phosphorescent substances  
(polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Transition metal complexes  
(polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Coordination compounds  
(polynuclear; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT Conducting polymers  
(polythiophenes, cationic, hole-injecting layer; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT 124-41-4, Sodium methanolate 497-19-8, Sodium carbonate (Na<sub>2</sub>CO<sub>3</sub>), uses 584-08-7, Potassium carbonate (K<sub>2</sub>CO<sub>3</sub>)  
(base, polynuclear metal complex prepared using; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT 4733-39-5, 2,9-Dimethyl-4,7-diphenyl[1,10]phenanthroline 34777-53-2  
150405-69-9, TAZ 399038-18-7  
(hole-blocking layer; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT 188049-41-4  
(hole-blocking or electron-transport layer; polynuclear metal complexes, their preparation and use as phosphorescence emitters in electroluminescent layer arrangements)  
IT 15082-28-7, 2-(4-Biphenyl)-5-(4-tert-butylphenyl)-1,3,4-oxadiazole 25067-59-8, Poly-N-vinylcarbazole 25190-62-9, Poly(1,4-phenylene) 58328-31-7 99627-56-2, Poly(9H-fluorene-2,7-diyl)  
(polynuclear metal complex-doped; polynuclear metal complexes, their preparation and use as phosphorescence emitters in

electroluminescent layer arrangements)  
 IT 7439-88-5DP, Iridium, compds. 7440-06-4DP, Platinum, compds.  
 (polynuclear metal complexes, their preparation and use as  
 phosphorescence emitters in electroluminescent layer  
 arrangements)  
 IT 67360-21-8P 116563-50-9P 658042-18-3P  
 (polynuclear metal complexes, their preparation and use as  
 phosphorescence emitters in electroluminescent layer  
 arrangements)  
 IT 4434-23-5P 17911-94-3P 20425-75-6P 658042-16-1P 658042-17-2P  
 658043-91-5P 658043-92-6P 658043-93-7P 658043-94-8P 658043-95-9P  
 (polynuclear metal complexes, their preparation and use as  
 phosphorescence emitters in electroluminescent layer  
 arrangements)  
 IT 90-02-8, 2-Hydroxybenzaldehyde, reactions 101-77-9 108-45-2,  
 m-Phenylenediamine, reactions 646-25-3, 1,10-Decanediamine 2479-47-2  
 2783-17-7, 1,12-Diaminododecane 3377-24-0 4097-89-6 85642-05-3  
 118727-34-7, 1,3,5-Tris(4-aminophenyl)benzene 343978-72-3 417705-49-8  
 (polynuclear metal complexes, their preparation and use as  
 phosphorescence emitters in electroluminescent layer  
 arrangements)  
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
 (1 CITINGS)

L66 ANSWER 12 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 140167611 HCA Full-text  
 TITLE: Direct current chargeable electrophotographic  
 photoreceptor with intermediate layer  
 INVENTOR(S): Tanabe, Tsuyoshi; Nakamura, Kazunari; Uesugi,  
 Hirotoshi  
 PATENT ASSIGNEE(S): Canon Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004004292	A	20040108	JP 2002-159720	20020531 <-- PRIORITY APPLN. INFO.: JP 2002-159720 20020531 <--
AB	The d.c direct-charging photoreceptor without charge-removing process comprises an electroconductive support successively coated with an intermediate layer with hole-blocking property containing metal oxide, a charge-generating layer and a charge-transporting layer. The electrophotog. apparatus having d.c. charging roller and the above photoreceptor and without charge removing means is also claimed. Image deterioration caused by charging unevenness is prevented.			
IT	9003-35-4, Plyophen J 325 (d.c. chargeable electrophotog. photoreceptor having intermediate layer with hole-blocking property)			
RN	9003-35-4 HCA			
CN	Phenol, polymer with formaldehyde (CA INDEX NAME)			

CM 1

CRN 108-95-2

CMF C6 H6 O



CM 2

CRN 50-00-0  
CMF C H2 OH<sub>2</sub>C=O

IPCI G03G0005-14 [ICM,7]; G03G0005-06 [ICS,7]; G03G0005-10 [ICS,7]; G03G0015-02 [ICS,7]  
 G03G0005-14 [I,C\*]; G03G0005-14 [I,A]; G03G0005-06 [I,C\*]; G03G0005-06 [I,A]; G03G0005-10 [I,C\*]; G03G0005-10 [I,A]; G03G0015-02 [I,C\*]; G03G0015-02 [I,A]  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 IT 9003-35-4, Plyophen J 325  
 (d.c. chargeable electrophotog. photoreceptor having intermediate layer with hole-blocking property)

L66 ANSWER 13 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 138:245268 HCA [Full-text](#)  
 TITLE: New class of hole-blocking

amorphous molecular materials and their application in blue-violet-emitting fluorescent and green-emitting phosphorescent organic electroluminescent devices

AUTHOR(S): Okumoto, Kenji; Shirota, Yasuhiko

CORPORATE SOURCE: Department of Applied Chemistry, Faculty of Engineering, Osaka University, Yamadaoka, Suita, Osaka, 565-0871, Japan

SOURCE: Chemistry of Materials (2003), 15(3), 699-707

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

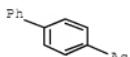
AB A new class of hole-blocking amorphous mol. materials for use in organic electroluminescent (EL) devices were developed, which include 1,3,5-tri(4-biphenyl)benzene, 1,3,5-tris(4-fluorobiphenyl-4'-yl)benzene (F-TBB), 1,3,5-tris(9,9-dimethylfluoren-2-yl)benzene, and 1,3,5-tris[4-(9,9-dimethylfluoren-2-yl)phenyl]benzene. They readily form stable amorphous glasses with well-defined glass-transition temps. and are characterized by relatively high oxidation potentials and large HOMO-LUMO energy gaps. The use of these materials as hole blockers enabled blue-violet emission from several emitting amorphous mol. materials with hole-transporting properties in organic EL devices. A multilayer organic EL device using N,N-bis(9,9-dimethylfluoren-2-yl)aniline (F2PA) as a blue-violet emitter, F-TBB as a hole blocker, and 4,4',4''-tris[3-methylphenyl(phenyl)amino]triphenylamine and tris(8-quinolinolato)aluminum as hole and electron transporters, resp., exhibited blue-violet emission peaking at 405 nm with a high external quantum efficiency

of 1.95 $\text{\AA}$ . This device also enabled the doping of a phosphorescent Ir complex, tris(2-phenylpyridine)iridium (Ir(ppy)3), tuning the emission color from blue violet to green by excitation energy transfer from F2PA to Ir(ppy)3.

IT 92-91-1, 4-Acetyl biphenyl  
 (synthesis of TBB; synthesis of organic hole-blocking  
 amorphous mol. materials and application in fluorescent and  
 phosphorescent organic electroluminescent devices)

RN 92-91-1 HCA

CN Ethanone, 1-[1,1'-biphenyl]-4-yl- (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 72, 76

ST amorphous hole blocking org material synthesis;  
 fluorescent phosphorescent light emitting  
 device

IT LUMO (molecular orbital)  
 (HOMO gap; of organic hole blocking and light  
 -emitting materials)

IT HOMO (molecular orbital)  
 (LUMO gap; of organic hole blocking and light  
 -emitting materials)

IT Electronic excitation  
 Fluorescence  
 (absorption and fluorescence maxima of organic hole  
 blocking and light-emitting materials)

IT Oxidation potential  
 (half-wave; of organic hole blocking and light  
 -emitting materials)

IT Luminescence, electroluminescence  
 (of electroluminescent devices containing organic hole  
 blocking and light-emitting materials)

IT Glass transition temperature  
 HOMO (molecular orbital)  
 LUMO (molecular orbital)  
 (of organic hole blocking and light-  
 emitting materials)

IT Half wave potential  
 (oxidation; of organic hole blocking and light-  
 emitting materials)

IT Electroluminescent devices  
 Hole (electron)  
 (synthesis of organic hole-blocking amorphous mol.  
 materials and application in fluorescent and phosphorescent  
 organic electroluminescent devices)

IT 50926-11-9, Indium tin oxide  
 (anode; synthesis of organic hole-blocking amorphous  
 mol. materials and application in fluorescent and  
 phosphorescent organic electroluminescent devices)

IT 37271-44-6  
 (cathode; synthesis of organic hole-blocking amorphous  
 mol. materials and application in fluorescent and  
 phosphorescent organic electroluminescent devices)

IT 6326-64-3P 372956-40-6P 441352-90-5P 441352-91-6P  
(hole blocking material; synthesis of organic  
hole-blocking amorphous mol. materials and  
application in fluorescent and phosphorescent organic  
electroluminescent devices)

IT 65181-78-4, TPD  
(light emitting material; synthesis of organic  
hole-blocking amorphous mol. materials and  
application in fluorescent and phosphorescent organic  
electroluminescent devices)

IT 134008-76-7P 165320-27-4P 246857-02-3P  
(light emitting material; synthesis of organic  
hole-blocking amorphous mol. materials and  
application in fluorescent and phosphorescent organic  
electroluminescent devices)

IT 94928-86-6  
(phosphorescent organic electroluminescent device;  
synthesis of organic hole-blocking amorphous mol.  
materials and application in fluorescent and phosphorescent  
organic electroluminescent devices)

IT 151417-38-8P, 1,3,5-Tris(4-iodophenyl)benzene  
(reactant for synthesis of F-TBB, TFPB; synthesis of organic hole  
-blocking amorphous mol. materials and application in  
fluorescent and phosphorescent organic  
electroluminescent devices)

IT 144981-85-1P, 9,9-Dimethyl-2-iodofluorene  
(reactant for synthesis of F2PA; synthesis of organic hole-  
blocking amorphous mol. materials and application in  
fluorescent and phosphorescent organic  
electroluminescent devices)

IT 16218-28-3P, 2,7-Diodofluorene 355832-04-1P,  
N-(9,9-Dimethylfluoren-2-yl)aniline  
(reactant for synthesis of PFPA; synthesis of organic hole-  
blocking amorphous mol. materials and application in  
fluorescent and phosphorescent organic  
electroluminescent devices)

IT 612-71-5, 1,3,5-Triphenylbenzene  
(synthesis of 1,3,5-tris(4-iodophenyl)benzene; synthesis of organic  
hole-blocking amorphous mol. materials and  
application in fluorescent and phosphorescent organic  
electroluminescent devices)

IT 7553-56-2, Iodine, reactions 10450-60-9, Periodic acid (H5IO6)  
(synthesis of 2-iodofluorene, 2,7-diiodofluorene,  
1,3,5-tris(4-iodophenyl)benzene; synthesis of organic hole-  
blocking amorphous mol. materials and application in  
fluorescent and phosphorescent organic  
electroluminescent devices)

IT 86-73-7, Fluorene  
(synthesis of 2-iodofluorene, 2,7-diiodofluorene; synthesis of organic  
hole-blocking amorphous mol. materials and  
application in fluorescent and phosphorescent organic  
electroluminescent devices)

IT 74-88-4, Methyliodide, reactions 865-47-4  
(synthesis of 9,9-dimethyl-2-iodofluorene,  
9,9-dimethyl-2,7-diiodofluorene; synthesis of organic hole-  
blocking amorphous mol. materials and application in  
fluorescent and phosphorescent organic  
electroluminescent devices)

IT 2523-42-4P, 2-Iodofluorene  
(synthesis of 9,9-dimethyl-2-iodofluorene,

9,9-dimethyl-2,7-diodofluorene; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 14221-01-3, Tetrakis(triphenylphosphine)palladium (synthesis of F-TBB, TFB, TFPB; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 1765-93-1, 4-Fluorophenylboronic acid (synthesis of F-TBB; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 108-67-8, Mesitylene, uses (synthesis of F2PA, p-BPD, PFFA; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 7440-50-8, Copper, uses (synthesis of N-(9,9-Dimethylfluoren-2-yl)aniline, 1,3,5-tris(4-iodophenyl)benzene, PFFA; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 62-53-3, Aniline, reactions (synthesis of N-(9,9-Dimethylfluoren-2-yl)aniline, F2PA; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 144981-86-2P, 9,9-Dimethyl-2,7-diodofluorene (synthesis of N-(9,9-Dimethylfluoren-2-yl)aniline; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 92-91-1, 4-Acetyl biphenyl 1493-13-6 (synthesis of TBB; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 333432-28-3 (synthesis of TFB, TFPB; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 626-39-1, 1,3,5-Tribromobenzene (synthesis of TFB; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 2085-33-8, AlQ3 124729-98-2 (synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

IT 1591-31-7, 4-Iodobiphenyl 84161-87-5, N,N-Diphenylbenzidine (synthesis of p-BPD; synthesis of organic hole-blocking amorphous mol. materials and application in fluorescent and phosphorescent organic electroluminescent devices)

## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R V L)	PG (R PG)	Referenced Work (R WK)	Referenced File
Adachi, C	1990	156	1799	Appl Phys Lett	IHCA

Baldo, M	1999	175	14	Appl Phys Lett	HCA
Baldo, M	1999	175	14	Appl Phys Lett	HCA
Baldo, M	1998	1395	151	Nature	HCA
Chan, L	2001	113	1637	Adv Mater	HCA
Garten, F	1997	185	1253	Synth Met	HCA
Grem, G	1992	14	36	Adv Mater	HCA
Hamada, Y	1992	31	1812	Jpn J Appl Phys	HCA
Hoshino, S	2000	187	1968	J Appl Phys	HCA
Hosokawa, C	1995	167	3853	Appl Phys Lett	HCA
Huang, J	1997	187	105	Synth Met	HCA
Ikai, M	2001	179	156	Appl Phys Lett	HCA
Ishikawa, W	1991	1	1731	Chem Lett	HCA
Ishikawa, W	1993	126	B94	J Phys D	HCA
Jiang, X	2000	176	1813	Appl Phys Lett	HCA
Kido, J	1993	163	1267	Appl Phys Lett	HCA
Kido, J	1996	1	47	Chem Lett	HCA
Kido, J	1993	32	L917	Jpn J Appl Phys	HCA
Kijima, Y	1999	138	15274	Jpn J Appl Phys	HCA
Kinoshita, M	2001	1	1614	Chem Lett	HCA
Kuwabara, Y	1994	16	1677	Adv Mater	HCA
Lamansky, S	2001	123	14304	J Am Chem Soc	HCA
Lee, C	2000	177	12280	Appl Phys Lett	HCA
Mitschke, U	2000	10	1471	J Mater Chem	HCA
Noda, T	1999	11	283	Adv Mater	HCA
Noda, T	2000	187-89	1168	J Lumin	HCA
Ogawa, H	1997	191	1243	Synth Met	HCA
Ohmori, Y	1991	130	L1941	Jpn J Appl Phys	
Okumoto, K	2001	179	1231	Appl Phys Lett	HCA
Okumoto, K	2001	1	1034	Chem Lett	
Okumoto, K	2001	185	135	Mater Sci Eng B	
Robinson, M	2001	111	1413	Adv Funct Mater	HCA
Romero, D	1997	19	1158	Adv Mater	HCA
Salbeck, J	1997	191	209	Synth Met	HCA
Shirota, Y	1994	165	1807	Appl Phys Lett	HCA
Shirota, Y	1989	1	1145	Chem Lett	HCA
Shirota, Y	2000	122	11021	J Am Chem Soc	HCA
Shirota, Y	2000	10	1	J Mater Chem	HCA
Shirota, Y	2000	1111-1	387	Synth Met	HCA
Stolka, M	1984	188	14707	J Phys Chem	HCA
Tang, B	2001	11	12974	J Mater Chem	HCA
Ueta, E	1994	1	12397	Chem Lett	HCA
Wu, C	2002	81	1577	Appl Phys Lett	HCA
Yang, Y	1996	79	1934	J Appl Phys	HCA
Zou, L	2001	179	12282	Appl Phys Lett	HCA
OS.CITING REF COUNT:	68	THERE ARE 68 CAPLUS RECORDS THAT CITE THIS RECORD (71 CITINGS)			

L66 ANSWER 14 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 137:391797 HCA Full-text  
 TITLE: High-efficiency organic electroluminescent  
 devices using iridium complex emitter and  
 arylamine-containing polymer buffer layer  
 AUTHOR(S): Fukase, Akio; Luan, Kinh; Dao, Thanh; Kido, Junji  
 CORPORATE SOURCE: Graduate School of Science and Engineering, Yamagata  
 University, Yamagata, 992-8510, Japan  
 SOURCE: Polymers for Advanced Technologies (2002),  
 13(8), 601-604  
 CODEN: PADTES; ISSN: 1042-7147  
 PUBLISHER: John Wiley & Sons Ltd.  
 DOCUMENT TYPE: Journal

## LANGUAGE:

English

AB Efficient organic electroluminescent (EL) devices were fabricated using a phosphorescent complex, tris(2-phenylpyridine)-iridium, Ir(ppy)3, as emitter and a buffer layer of tetraphenyl diamine-containing poly(arylene ether sulfone) (PTPDES) doped with tris(4-bromophenyl) aminium hexachloroantimonate (TBPAAH) as electron acceptor. The complete device structure comprises glass substrate, ITO and Al electrodes and the active layers. Hole-transporting *N,N'*-di(1-naphthyl)-*N,N'*-diphenylbenzidine ( $\alpha$ -NPD) was used as host for the emitter layer; 4,4'-*N,N'*-dicarbazolylbiphenyl (CBP), Ir(ppy)3, hole-blocking 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline (BCP), and electron-transporting tris(8-quinolinato)aluminum (III) (Alq3) were also included in the structure. The device demonstrated external quantum efficiency of 21.6% and luminous efficiency of 82 lm/W (77 cd/A) at 3.0 V. The high efficiency is due to the high quantum efficiency of phosphorescent Ir(ppy)3 and high luminous efficiency realized by the use of the polymer buffer layer.

IT 173394-17-7 173394-18-8

(PTPDES, anode buffer layer; electroluminescent devices with  
Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
poly(aminophenylene-ether-sulfone) buffer layer)

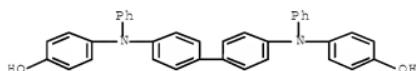
RN 173394-17-7 HCA

CN Phenol, 4,4'-([1,1'-biphenyl]-4,4'-diylbis(phenylimino)]bis-, polymer with  
1,1'-sulfonylbis[4-fluorobenzene] (CA INDEX NAME)

CM 1

CRN 121333-95-7

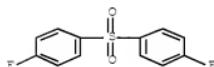
CMF C36 H28 N2 O2



CM 2

CRN 383-29-9

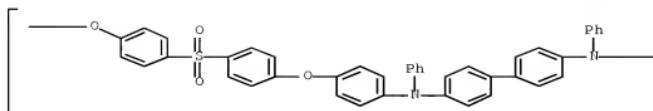
CMF C12 H8 F2 O2 S



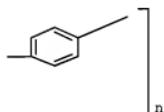
RN 173394-18-8 HCA

CN Poly[oxy-1,4-phenylene sulfonyl-1,4-phenyleneoxy-1,4-phenylene(phenylimino)[1,1'-biphenyl]-4,4'-diyl(phenylimino)-1,4-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 76-5 (Electric Phenomena)

Section cross-reference(s): 38, 73

ST iridium phenylpyridine emitter aminium polyaryleneethersulfone acceptor  
 electroluminescent device; napthylphenylbenzidine  
 dicarbazolylbiphenyl iridium phenylpyridine quantum efficiency device;  
 quinolinatoaluminum electron transport layer iridium phenylpyridine  
 electroluminescent device

IT Electroluminescent devices

Electron acceptors

Glass substrates

Phosphorescence

(electroluminescent devices with

Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)

IT Polysulfones, uses

(polyamine-polyether-, PTPDES, anode buffer layer;  
 electroluminescent devices withIr-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)

IT Polyethers, uses

(polyamine-polysulfone-, PTPDES, anode buffer layer;  
 electroluminescent devices withIr-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)

IT Polyanines

(polyether-polysulfone-, PTPDES, anode buffer layer;  
 electroluminescent devices withIr-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)

IT 24964-91-8, Tris(4-bromophenyl)aminium hexachloroantimonate

(Lewis acid dopant, PTPDES oxidant; electroluminescent  
 devices with Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)

IT 173394-17-7 173394-18-8

(PTPDES, anode buffer layer; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and

poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 50926-11-9, ITO  
 (anode; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 7789-24-4, Lithium fluoride (LiF), uses  
 (cathode interface layer; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 7429-90-5, Aluminum, uses  
 (cathode; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 2085-33-8, Tris(8-quinolinolato)aluminum  
 (electron transport layer; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 94928-86-6, Tris(2-phenylpyridine)iridium  
 (emitter layer dopant; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline  
 (hole blocking layer; electroluminescent  
 devices with Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 123847-85-8, N,N'-Di(1-naphthyl)-N,N'-diphenylbenzidine  
 (hole transport layer; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)  
 IT 58328-31-7, 4,4'-N,N'-Dicarbazolylbiphenyl  
 (host emitter layer; electroluminescent devices with  
 Ir-phenylpyridine/dicarbazolylbiphenyl emitter and  
 poly(aminophenylene-ether-sulfone) buffer layer)

## RETABLE

Referenced (RAU)	Author	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Arai, M		1997	191	21	Synth Met	HCA
Baldo, M		1999	175	4	Appl Phys Lett	HCA
Berntsen, A		1998	19	125	Opt Mater	HCA
Hung, L		1997	170	152	Appl Phys Lett	HCA
Itoh, Y		1990	1	1	Ext Abstr (51st Autu	
Kido, J		1998	173	12721	Appl Phys Lett	HCA
Kido, J		1993	140	1342	IEEE Trans Electron	HCA
Kido, J		1995	17	31	Polym Adv Technol	
Sato, Y		2000	14105	134	Proc Soc of Photo-Op	
Tang, C		1987	51	1913	Appl Phys Lett	HCA
VanSlyke, S		1996	169	2160	Appl Phys Lett	HCA
Wakimoto, T		1997	144	1245	IEEE Trans Electron	HCA
Yamamori, A		1999	186	14369	J Appl Phys	HCA
Yang, Y		1995	177	1694	J Appl Phys	HCA
OS.CITING REF COUNT:		14	THERE ARE 14 CAPLUS RECORDS THAT CITE THIS RECORD (14 CITINGS)			

L66 ANSWER 15 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 137:377262 HCA Full-text  
 TITLE: High efficiency multi-color electro-  
 phosphorescent OLEDs  
 INVENTOR(S): D'Andrade, Brian; Thompson, Mark E.; Forrest, Stephen  
 R.

PATENT ASSIGNEE(S): The Trustees of Princeton University, USA; The University of Southern California  
 SOURCE: PCT Int. Appl., 50 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002091814	A2	20021121	WO 2002-US14956	20020513 <--
WO 2002091814	A3	20030327		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, EZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IB, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002305548	A1	20021125	AU 2002-305548	20020513 <--
US 20020197511	A1	20021226	US 2002-144419	20020513 <--
US 7009338	B2	20060307		
EP 1309062	A2	20040225	EP 2002-734378	20020513 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004522276	T	20040722	JP 2002-588742	20020513 <--
JP 4493915	B2	20100630		
CN 1543659	A	20041103	CN 2002-811783	20020513 <--
CN 1302565	C	20070228		
EP 2259285	A2	20101208	EP 2010-181013	20020513 <--
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR, AL, LT, LV, MK, RO, SI				
KR 888424	B1	20090311	KR 2003-7014984	20031117 <--
IN 2003DN01950	A	20051216	IN 2003-DN1950	20031118 <--
US 20050282036	A1	20051222	US 2005-211385	20050824 <--
US 7285907	B2	20071023		

PRIORITY APPLN. INFO.:	US 2001-291496P	P 20010516 <--
	EP 2002-734378	A3 20020513 <--
	US 2002-144419	A1 20020513 <--
	WO 2002-US14956	W 20020513 <--

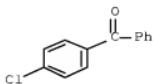
## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB An organic light emitting device is described comprising an anode; a hole transporting layers; an emissive region; an electron transporting layer; and a cathode; wherein the emissive region is comprising a host material and a multiple emissive dopants to generate white emission, and wherein the emissive region is comprising a multiple bands and each emissive dopant is doped into a sep. band within the emissive region, and wherein at least one of the emissive dopants emits light by phosphorescence.

IT 134-85-0  
 (red emission layer; high efficiency multi-color electro-phosphorescent organic LEDs)

RN 134-85-0 HCA

CN Methanone, (4-chlorophenyl)phenyl- (CA INDEX NAME)



IPCI H01L [ICM]  
 IPCR C09K0011-06 [I,C\*]; C09K0011-06 [I,A]; H01J0001-00 [I,C\*]; H01J0001-74  
 [I,A]; H01J0029-18 [I,C\*]; H01J0029-32 [I,A]; H01L0051-50 [I,C\*];  
 H01L0051-50 [I,A]; H05B0033-14 [I,C\*]; H05B0033-14 [I,A]  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 76  
 ST electro phosphorescence light emitting diode  
 multi color  
 IT Electroluminescent devices  
 (high efficiency multi-color electro-phosphorescent organic  
 LEDs)  
 IT 376367-93-0  
 (blue phosphor dopant; high efficiency multi-color electro-  
 phosphorescent organic LEDs)  
 IT 7429-90-5, Aluminum, uses  
 (cathode; high efficiency multi-color electro-phosphorescent  
 organic LEDs)  
 IT 94928-86-6  
 (green emission dopant; high efficiency multi-color electro-  
 phosphorescent organic LEDs)  
 IT 2085-33-8, Alq<sub>3</sub> 7789-24-4, Lithium fluoride (LiF), uses 16152-10-6  
 50851-57-5, Poly(styrene sulfonic acid) 50926-11-9, Indium tin oxide  
 123847-85-8,  $\alpha$ -NPD 126213-51-2, PEDOT 337526-88-2  
 (high efficiency multi-color electro-phosphorescent organic  
 LEDs)  
 IT 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline  
 (hole-blocking layer; high efficiency multi-color  
 electro-phosphorescent organic LEDs)  
 IT 134-85-0  
 (red emission layer; high efficiency multi-color electro-  
 phosphorescent organic LEDs)  
 IT 343978-79-0  
 (red emissive layer dopant; high efficiency multi-color electro-  
 phosphorescent organic LEDs)

RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (R WK)	Referenced File
Anon				US 5707745 A	HCA
Anon				US 5837391 A	HCA
OS.CITING REF COUNT:	30	THERE ARE 30 CAPLUS RECORDS THAT CITE THIS RECORD (46 CITINGS)			

L66 ANSWER 16 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 137:208313 HCA Full-text  
 TITLE: Photoconductive imaging members  
 INVENTOR(S): Liu, Ping; Hsiao, Cheng-kuo; Ong, Beng S.; Fuller,  
 Timothy J.; Yuh, Huoy-jen; Cherniack, Helen R.;  
 Silvestri, Markus R.

January 3, 2011

10/581,005

55

PATENT ASSIGNEE(S): Xerox Corporation, USA  
SOURCE: U.S., 12 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6444386	B1	20020903	US 2001-834292	20010413 <--
PRIORITY APPLN. INFO.:			US 2001-834292	20010413 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 137:208313

AB A photoconductive imaging member contains (1) a supporting substrate, (2) a hole blocking layer, (3) a photogenerating layer, and (4) a charge transport layer. The hole blocking layer is generated from crosslinking an organosilane: SIRR1R2R3 (R = alkyl, aryl, with the substituent being halide, alkoxy, aryloxy, amino; R1-3 = alkyl, aryl, alkoxy, aryloxy, acyloxy, halide, cyano, and amino) in the presence of a hydroxy-functionalized polymer: (A)<sub>x</sub>(B-D-OH)<sub>y</sub> (A, B = resp. divalent and trivalent repeating units; D = divalent linkage; x, y = mole fractions of the repeating units of A and B, resp., and x = 0-0.99, y = 0.01-1, x+y = 1).

IT 26355-01-1P, 2-Hydroxyethyl methacrylate-methyl methacrylate copolymer  
(hole blocking layer; photoconductive imaging

members containing)

RN 26355-01-1 HCA  
CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with methyl 2-methyl-2-propenoate (CA INDEX NAME)

CM 1

CBN 868-77-9

CME C6 H10 03



CM 2

CRN 80-62-6  
CMF C5 H8 02



INCL 430064000

IPCI G03G0005-14 [ICM, 7]

IPC R G03G0005-06 [I,C\*]; G03G0005-06 [I,A]; G03G0005-14 [I,C\*]; G03G0005-14 [I,A]

[1, H]  
NGC 430/064, 000

CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other)

## Reproductive Processes)

Section cross-reference(s): 35, 38

IT 26355-01-1P, 2-Hydroxyethyl methacrylate-methyl methacrylate copolymer  
(hole blocking layer; photoconductive imaging members containing)

## RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RPG)	Referenced (RWK)	File
Baczek		1981			US 4298697 A		HCA
Hoffend		1985			US 4560635 A		HCA
Hor		1985			US 4555463 A		HCA
Hor		1986			US 4587189 A		HCA
Keoshkerian		1996			US 5482811 A		HCA
Lu		1982			US 4338390 A		HCA
Melniky		1990			US 4921773 A		HCA
Middleton		1964			US 3121006 A		HCA
Ong		2001			US 6287737 B1		HCA
Stolka		1981			US 4265990 A		HCA
Teuscher		1984			US 4464450 A		HCA
Yuh		1990			US 4921769 A		HCA

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD  
(8 CITINGS)

L66 ANSWER 17 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 136:207054 HCA [Full-text](#)

TITLE: Hole blocking effect on the organic electroluminescent device using europium complex

AUTHOR(S): Kim, Jun Ho; Lee, Sang Phil; Kim, Jung Soo; Kim, Young Kwan; Lee, Seung Hee

CORPORATE SOURCE: Department of Electrical & Control Engineering, Hong-Ik, University, Seoul, 121-791, S. Korea

SOURCE: Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (2001), 371, 455-458

CODEN: MCLC9; ISSN: 1058-725X

PUBLISHER: Gordon & Breach Science Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

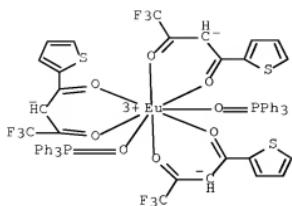
AB The Eu complex, Eu(TTA)3(TPPO) [tris-(4,4,4-trifluoro-1-(2-thienyl)-butane-1,3-dionate)-triphenyl phosphine oxide europium(III)] is known as the sharp red electroluminescent organic material at the wavelength of 615 nm, but its luminance is quite low. In this study, the complex's elec. and optical characteristics were improved using the hole blocking layer (HBL), BCP [2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline]. The device with a structure of ITO/TPD/Eu(TTA)3(TPPO)/BCP/Alq3/Li:Al/Al was fabricated and its photoluminescent and electroluminescent characteristics were investigated. It was found that the BCP layer with a thickness of 6 nm can block the holes from Eu complex efficiently to improve the EL characteristics of the device. Details on the elec. properties of these structures are also discussed.

IT 12121-29-8

(hole blocking effect on organic electroluminescent device using europium complex as emitter and bathocuproine as hole-blocking layer)

RN 12121-29-8 HCA

CN Europium, tris[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato- $\kappa$ O1, $\kappa$ O3]bis(triphenylphosphine oxide- $\kappa$ O)- (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 12121-29-8

(hole blocking effect on organic electroluminescent device using europium complex as emitter and bathocuproine as hole-blocking layer)

RETABLE

Referenced (RAU)	Author	Year   VOL   PG   (RPL)   (RVL)   (RPG)	Referenced Work   (RWK)	Referenced File   (HCA)
Kido, J		1994   65   2124	Appl Phys Lett	HCA
Kijima, Y		1998	Spring MRS	
Tsutsui, T		1994   65   1868	Appl Phys Lett	HCA

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

L66 ANSWER 18 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 135:233846 HCA [Full-text](#)

TITLE: Photoconductive hole blocking layer

INVENTOR(S): Ong, Beng S.; Liu, Ping; Hsiao, Cheng-kuo; Yuh, Huoy-jen; Chambers, John S.; Pai, Damodar M.; Silvestri, Markus R.; Carmichael, Kathleen M.

PATENT ASSIGNEE(S): Xerox Corporation, USA

SOURCE: U.S., 22 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6287737	B1	20010911	US 2000-579491	20000530 <--
JP 2002023404	A	20020123	JP 2001-152568	20010522 <--

PRIORITY APPLN. INFO.: US 2000-579491 A 20000530 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 135:233846

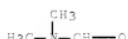
AB The present invention encompasses xerog. imaging and printing, including digital. A photoconductive imaging member is comprised of a supporting substrate, a hole blocking layer thereover, a photogenerating layer and a charge transport layer. The hole blocking layer is comprised of a crosslinked polymer derived from silyl-functionalized hydroxyalkyl polymer -(A)a-(b(SiX3))b-(D(E))c-(F(OH))d- (A, B, D, and F = segments of polymer backbone; E

= electron transporting moiety; X = halide, cyano, alkoxy, acyloxy, and aryloxy; a, b, c, and d = mole fractions of repeating monomer units, satisfying  $a+b+c+d = 1$  reacted with an organosilane  $RSiR_1R_2R_3$  (R= alkyl, alkyl, aryl; R1-3 = alkyl, aryl, alkoxy, aryloxy, acyloxy, halogen, cyano, and amino) and water. The presence of a hydroxyl group enables the addition of water to the coating solution without substantially causing phase separation, and also accelerates the curing or crosslinking the hole blocking layer.

IT 68-12-2, N,N-Dimethylformamide, reactions  
(electrophotog. photoconductive hole blocking layer  
prepared from)

RN 68-12-2 HCA

CN Formamide, N,N-dimethyl- (CA INDEX NAME)



INCL 430058800

IPCI G03G0005-047 [ICM,7]; G03G0005-043 [ICM,7,C\*]; G03G0005-14 [ICS,7]

IPCR C08F0008-00 [I,C\*]; C08F0008-42 [I,A]; C08F0212-00 [I,C\*]; C08F0212-02 [I,A]; C08F0220-00 [I,C\*]; C08F0220-12 [I,A]; C08F0230-00 [I,C\*]; C08F0230-08 [I,A]; G03G0005-043 [I,C\*]; G03G0005-047 [I,A]; G03G0005-05 [I,C\*]; G03G0005-05 [I,A]; G03G0005-14 [I,C\*]; G03G0005-14 [I,A]

NCL 430/058.800; 430/058.650; 430/059.400; 430/064.000

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38

IT 68-12-2, N,N-Dimethylformamide, reactions 1592-20-7,

4-Vinylbenzyl chloride 36232-49-2,

9-Dicyanomethylenefluorene-4-carboxylic acid

(electrophotog. photoconductive hole blocking layer  
prepared from)

RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RPG)	Referenced (RWK)	File
Burt		1996			US 5493016	HCA	
Duff		1997			US 5645965	HCA	
Keoshkerian		1996			US 5482811	HCA	
Liu		1999			US 5874193	HCA	
Mayo		1995			US 5473064	HCA	
Ong		1999			US 5871877	HCA	
Springett		2000			US 6030735	HCA	
Stolka		1981			US 4265990	HCA	
OS.CITING REF COUNT:	33	THERE ARE 33 CAPLUS RECORDS THAT CITE THIS RECORD (33 CITINGS)					

L66 ANSWER 19 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 135:11837 HCA Full-text

TITLE: An Efficient Pyridine- and Oxadiazole-Containing Hole-Blocking Material for Organic Light-Emitting Diodes: Synthesis, Crystal Structure, and Device Performance

AUTHOR(S): Wang, Changsheng; Jung, Gun-Young; Hua, Yulin; Pearson, Christopher; Bryce, Martin R.; Petty, Michael C.; Batsanov, Andrei S.; Goeta, Andres E.; Howard, Judith A. K.

## CORPORATE SOURCE:

Department of Chemistry and School of Engineering,  
University of Durham, Durham, DH1 3LE, UK  
Chemistry of Materials (2001), 13(4),  
1167-1173

CODEN: CMATEX; ISSN: 0897-4756

American Chemical Society

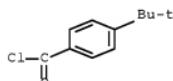
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The authors focus on the synthesis and structure of the new bis(1,3,4-oxadiazole) system 2,5-bis[2-(4-tert-butylphenyl)-1,3,4-oxadiazol-5-yl]pyridine (PDPyDP). The authors have fabricated light-emitting diodes (LEDs) using poly[2-methoxy-5-(2-ethylhexoxy)-1,4-phenylene vinylene] (MEH-PPV) as the emissive material, with and without a thermally evaporated electron-injection/hole-blocking layer of either PDPyDP or its vinylene analog (E)-1,2-bis[2-(4-tert-butylphenyl)-1,3,4-oxadiazol-5-yl]ethene (PDVDP) or its phenylene analog 1,4-bis[2-(4-tert-butylphenyl)-1,3,4-oxadiazol-5-yl]benzene (PDPDP). PDPDP is the para isomer of OXD-7, which is a widely used mol. electron-transporting material. Electroluminescence spectra indicate that light is emitted only from the MEH-PPV layer. Using Al as the cathode, the bilayer LED with PDPyDP is considerably more efficient than the corresponding single-layer device or devices with PDVDP or PDPDP as the electron-injection layer.

IT 1710-98-1, 4-tert-Butylbenzoyl chloride  
(efficient pyridine- and oxadiazole-containing hole-blocking material for organic light-emitting diodes: synthesis, crystal structure, and device performance)

RN 1710-98-1 HCA

CN Benzoyl chloride, 4-(1,1-dimethylethyl)- (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28, 75, 76

IT 1710-98-1, 4-tert-Butylbenzoyl chloride 6011-55-8,  
Pyridine-2,5-dicarboxylic acid dihydrazide 7803-57-8, Hydrazine hydrate  
(efficient pyridine- and oxadiazole-containing hole-blocking material for organic light-emitting diodes: synthesis, crystal structure, and device performance)

## RETABLE

Referenced Work (RAU)	Author (RPY)	Year (RVL)	VOL (RPG)	PG (RPG)	Referenced Work (RWK)	Referenced File
Adachi, C		1989	155	1489	Appl Phys Lett	HCA
Allen, F		1993	18	1	Chem Des Autom News	
Antolini, L		1998	10	382	Adv Mater	HCA
Brown, A		1992	161	12793	Appl Phys Lett	HCA
Bruker Analytical X-Ray	1997			1	SMART and SAINT, Are	
Burroughes, J		1990	347	1539	Nature	HCA
Chen, J		1987	18	325	Gaodeng Xuexiao Huax	HCA
Chondroudis, K		1999	11	3028	Chem Mater	HCA
Dailey, S		1998	10	5171	J Phys:Condens Mater	HCA

Dailey, S	1999	102	1945	Synth Met	HCA
Fichou, D	2000	10	1571	J Mater Chem	HCA
Garrett, S	1992	181	1454	J Chem Soc	
Horowitz, G	1998	10	1365	Adv Mater	HCA
Iwakura, Y	1967	108	1160	Makromol Chem	HCA
Jung, G				J Appl Phys, to be s	
Jung, G	2001		1307	Organic Light-Emitti	HCA
Kilitziraki, M	1998	1335	1209	Thin Solid Films	HCA
Kim, D	1996	1280	1325	Mol Cryst Liq Cryst	HCA
Kim, H	1998	14	1324	J Ind Eng Chem (Seou	HCA
Kim, H	1999	7	118	Korea Polym J	HCA
Kim, J	1999	19	12171	J Mater Chem	HCA
Kraft, A	1998	137	1402	Angew Chem, Int Ed E	
Kuznetsov, V	1996	13	1460	Funct Mater	
Meyer, H	1913	134	1525	Monatsh Chem	
Mitschke, U	1998	14	12211	Chem Eur J	HCA
Mitschke, U	2000	10	11471	J Mater Chem	HCA
O'Brien, D	1997	182	12662	J Appl Phys	HCA
O'Brien, D	1998	19	1173	Opt Mater (Amsterdam	HCA
Pan, J	1988	19	141	Gaodeng Xuexiao Huax	HCA
Perrin, D	1980			Purification of Labo	
Segura, J	1998	149	1319	Acta Polym	HCA
Sheldrick, G	1997			SHELXTL/NT, version	
Shinohara, H	1958	115	1839	Kobunshi Kagaku	HCA
Siegrist, T	1998	10	1379	Adv Mater	HCA
Tang, C	1987	151	1913	Appl Phys Lett	HCA
Thelakkat, M	1998	19	1429	Polym Adv Technol	HCA
Tian, J	1995	17	12190	Chem Mater	HCA
Wang, C	2000	112	1217	Adv Mater	HCA

OS.CITING REF COUNT: 70 THERE ARE 70 CAPLUS RECORDS THAT CITE THIS RECORD (71 CITINGS)

L66 ANSWER 20 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 135:6245 HCA Full-text  
 TITLE: Light-Emitting Devices Based on a  
 Poly(p-phenylenevinylene) Statistical Copolymer with  
 Oligo(ethylene oxide) Side Groups  
 AUTHOR(S): Morgado, J.; Cacialli, F.; Friend, R. H.; Chuah, B.  
 S.; Rost, H.; Holmes, A. B.  
 CORPORATE SOURCE: Departamento de Engenharia Quimica, Instituto Superior  
 Tecnico, Lisbon, P-1049-001, Port.  
 SOURCE: Macromolecules (2001), 34(9), 3094-3099  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The photoluminescence and electroluminescence were studied of the statistical copolymer poly[2,5-bis(dimethyloctylsilyl)-1,4-phenylenevinylene-2,5-bis(triethoxymethoxy)-1,4-phenylenevinylene], BDMOS-co-BTEM-PPV. The BDMOS-co-BTEM-PPV copolymer is designed to combine the high luminescence efficiency of BDMOS-PPV with the ion-coordinating ability of BTEM-PPV. The photoluminescence efficiency increased to about 17% from 8.8% for BTEM-PPV. In single-layer light-emitting diode test structures with calcium (aluminum) cathode the luminance was up to 1300 (10) cd/m<sup>2</sup> with an efficiency of  $\approx$  0.5 (0.01) cd/A. The ITO/BDMOS-co-BTEM-PPV:LiTf (8%)/Al device structures display behavior typical of light-emitting electrochem. cells, LECs, with efficiency up to 0.03 cd/A. The statistical copolymer contributes to the photoluminescence efficiency and provides sufficient ion coordination for LEC applications.

IT 9011-14-7, Poly(methyl methacrylate)

(hole-blocking/electron transport layer; preparation and luminescence and ion coordinating efficiency of poly(bis(dimethyloctylsilyl)-bis(triethoxymethoxy)-p-phenylenevinylene) for LEDs)

RN 9011-14-7 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, homopolymer (CA INDEX NAME)

CM 1

CRN 80-62-6

CMF C5 H8 O2



CC 37-5 (Plastics Manufacture and Processing)

Section cross-reference(s): 73

IT 852-38-0, PBD 9011-14-7, Poly(methyl methacrylate)  
(hole-blocking/electron transport layer; preparation and luminescence and ion coordinating efficiency of poly(bis(dimethyloctylsilyl)-bis(triethoxymethoxy)-p-phenylenevinylene) for LEDs)

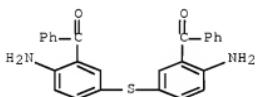
RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RWK)	Referenced File
		(R PY)	(R V L)	(R PG)		
Bloom, P		1996	168	13308	Appl Phys Lett	HCA
Bredas, J		1994	217	1507	Chem Phys Lett	HCA
Brown, A		1992	61	12793	Appl Phys Lett	HCA
Burroughes, J		1990	1347	1539	Nature	HCA
Chu, H		1999	101	1216	Synth Met	HCA
Chuah, B		1997	91	1279	Synth Met	HCA
Demello, J		1997	19	1230	Adv Mater	HCA
Demello, J		1998	157	12951	Phys Rev B	HCA
Demello, J		2000	85	1421	Phys Rev Lett	HCA
Friend, R		1999	1397	121	Nature	HCA
Greenham, N		1994	16	1491	Adv Mater	HCA
Halls, J		1999	160	15721	Phys Rev B	HCA
Heilbig, M		1993	194	1607	Makromol Chem	HCA
Holzer, L		1999	102	1022	Synth Met	HCA
Holzer, L		1999	100	171	Synth Met	HCA
Hwang, D		1997	125	111	Macromol Symp	
Janietz, S		1998	173	2453	Appl Phys Lett	HCA
Kim, J		1998	84	16859	J Appl Phys	HCA
Kim, S		1996	18	1979	Adv Mater	HCA
Kraft, A		1998	137	1402	Angew Chem, Int Ed E	
Lebedev, E		1997	71	12686	Appl Phys Lett	HCA
Morgado, J		1999	185	1784	J Appl Phys	HCA
Morgado, J		1999	186	16392	J Appl Phys	HCA
Pei, Q		1996	118	13922	J Am Chem Soc	HCA
Pei, Q		1996	118	17416	J Am Chem Soc	HCA
Pei, Q		1995	269	1086	Science	HCA
Pommerehne, J		1995	7	15517	Adv Mater	
Rost, H		1999	102	1937	Synth Met	HCA
Wu, P		1995	267	1441	Mol Cryst Liq Cryst	
Yu, G		1996	1259	1465	Chem Phys Lett	HCA

OS.CITING REF COUNT: 38 THERE ARE 38 CAPLUS RECORDS THAT CITE THIS

## RECORD (38 CITINGS)

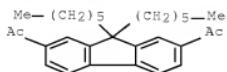
L66 ANSWER 21 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 133:193562 HCA Full-text  
 TITLE: New polyquinoline copolymers: synthesis, optical, luminescent, and hole-blocking/electron-transporting properties  
 AUTHOR(S): Kim, Jong Lae; Kim, Jai Kyeong; Cho, Hyun Nam; Kim, Dong Young; Kim, Chung Yup; Hong, Sung Il  
 CORPORATE SOURCE: Department of Fiber Polymer Science, Seoul National University, Seoul, 151-742, S. Korea  
 SOURCE: Macromolecules (2000), 33(16), 5880-5885  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB A series of polyquinolines containing the 9,9-dihexylfluorene unit in the main chain were synthesized via Friedlaender quinoline synthesis in good yields. The thermal, optical, luminescent, electrochem., and hole-blocking/electron-transporting properties of these polyquinolines were examined. The glass transition temps. were in the range 195-243°C, and these polyquinolines had initial decomposition temps. of >388°C. Their optical and luminescent properties varied with the chain rigidity and conjugation length. Cyclic voltammetry studies reveal that these polyquinolines undergo irreversible oxidation onset around -6.0 eV, and their LUMO level ranged from -2.78 to -3.21 eV. The application of two of these polyquinolines as a hole-blocking/electron-transporting layer in polymeric LEDs was demonstrated.  
 IT 106500-65-6P, 4,4'-Diamino-3,3'-dibenzoyldiphenyl sulfide  
 (monomer; preparation and optical, luminescent and hole-blocking/electron-transporting properties of)  
 RN 106500-65-6 HCA  
 CN Methanone, [thiobis(6-amino-3,1-phenylene)]bis[phenyl- (9CI) (CA INDEX NAME)



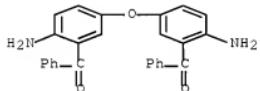
IT 222416-60-6 222416-62-8  
 (optical, luminescent and hole-blocking  
 /electron-transporting properties of)  
 RN 222416-60-6 HCA  
 CN Ethanone, 1,1'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with  
 [oxybis(6-amino-3,1-phenylene)]bis[phenylmethanone] (9CI) (CA INDEX NAME)

CM 1

CRN 222416-59-3  
 CMF C29 H38 O2



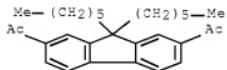
CM 2

CRN 59827-14-4  
CMF C26 H20 N2 O3

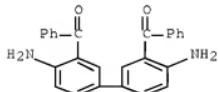
RN 222416-62-8 HCA

CN Ethanone, 1,1'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with (4,4'-diamino[1,1'-biphenyl]-3,3'-diyl)bis[phenylmethanone] (9CI) (CA INDEX NAME)

CM 1

CRN 222416-59-3  
CMF C29 H38 O2

CM 2

CRN 71713-10-5  
CMF C26 H20 N2 O2IT 289471-87-0P 289471-89-2P  
2,7-Diacetyl-9,9-dihexylfluorene-4,4'-Diamino-3,3'-dibenzoylstilbene copolymer

(preparation and optical, luminescent and hole-blocking  
/electron-transporting properties of)

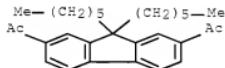
RN 289471-87-0 HCA

CN Ethanone, 1,1'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with  
[thiobis(6-amino-3,1-phenylene)]bis[phenylmethanone] (9CI) (CA INDEX  
NAME)

CM 1

CRN 222416-59-3

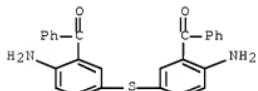
CMF C29 H38 O2



CM 2

CRN 106500-65-6

CMF C26 H20 N2 O2 S



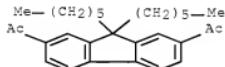
RN 289471-89-2 HCA

CN Ethanone, 1,1'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with  
[1,2-ethenediylbis(6-amino-3,1-phenylene)]bis[phenylmethanone] (9CI) (CA  
INDEX NAME)

CM 1

CRN 222416-59-3

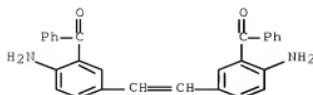
CMF C29 H38 O2



CM 2

CRN 94751-92-5

CMF C28 H22 N2 O2



CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 36, 72, 73, 76  
 IT 106500-65-6P, 4,4'-Diamino-3,3'-dibenzoyldiphenyl sulfide  
 (monomer; preparation and optical, luminescent and hole-blocking/electron-transporting properties of)  
 IT 222416-60-6 222416-61-7 222416-62-8 222416-63-9  
 (optical, luminescent and hole-blocking/electron-transporting properties of)  
 IT 289471-87-0P 289471-88-2P,  
 2,7-Diacetyl-9,9-dihexylfluorene-4,4'-Diamino-3,3'-dibenzoyldiphenyl sulfide copolymer, SRU 289471-89-2P,  
 2,7-Diacetyl-9,9-dihexylfluorene-4,4'-Diamino-3,3'-dibenzoylstilbene copolymer 289471-90-5P, 2,7-Diacetyl-9,9-dihexylfluorene-4,4'-Diamino-3,3'-dibenzoylstilbene copolymer, SRU  
 (preparation and optical, luminescent and hole-blocking/electron-transporting properties of)

## RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RVL)	Work (RWK)	Referenced File
Akbowitz, M		1992	83	937	Solid State Commun	HCA	
Agrawal, A		1992	196	12837	J Phys Chem	HCA	
Agrawal, A		1993	126	1895	Macromolecules	HCA	
Burn, P		1993	115	10117	J Am Chem Soc	HCA	
Burrough, J		1990	130	1539	Nature		
Cao, Y		1999	1397	1414	Nature	HCA	
Cho, H		1999	132	1476	Macromolecules	HCA	
Fukuda, M		1990	131	12465	J Polym Sci, Polym C		
Janietz, S		1997	19	403	Adv Mater	HCA	
Jenekhe, S		1997	19	409	Chem Mater	HCA	
Jenekhe, S		1994	1265	1765	Science	HCA	
Kim, D		1997	3418	151	Proc SPIE Int Soc Opt		
Kim, J		1999	132	2065	Macromolecules	HCA	
Kim, K		1992	146	1	J Appl Polym Sci	HCA	
Norris, S		1976	19	496	Macromolecules	HCA	
Ohmori, Y		1991	130	L1941	Jpn J Appl Phys		
Osaheni, J		1994	127	1739	Macromolecules	HCA	
Parker, I		1994	165	1272	Appl Phys Lett	HCA	
Pei, Q		1996	118	17416	J Am Chem Soc	HCA	
Pelter, M		1990	123	12418	Macromolecules	HCA	
Pichler, K		1997	1355	1829	Philos Trans R Soc L	HCA	
Pommerehne, J		1995	17	1551	Adv Mater	HCA	
Stille, J		1981	14	1870	Macromolecules	HCA	
Strukelj, M		1995	267	11969	Science	HCA	
Sybert, P		1981	14	1493	Macromolecules	HCA	
Tani, H		1963	136	1391	Bull Chem Soc Jpn		
Tunney, S		1987	120	1258	Macromolecules	HCA	
Vancraeynest, W		1980	113	1361	Macromolecules	HCA	
Yu, W		1998	120	11808	J Am Chem Soc	HCA	
Zhang, C		1994	162	135	Synth Met	HCA	
Zhang, X		1999	132	17422	Macromolecules	HCA	

January 3, 2011

10/581,005

66

Zimmermann, E |1985 |18 |321 |Macromolecules |HCA  
OS.CITING REF COUNT: 74 THERE ARE 74 CAPLUS RECORDS THAT CITE THIS  
RECORD (74 CITINGS)

L66 ANSWER 22 OF 31 HCA COPYRIGHT 2011 ACS on STN  
ACCESSION NUMBER: 133:24680 HCA Full-text  
TITLE: Photoconductive imaging member  
INVENTOR(S): Jennings, Carol A.; Murti, Dasarao K.; Smith, Paul F.;  
McAneney, Gwynne E.; Hor, Ah-Mee; Gardner, Sandra J.;  
Ong, Beng S.  
PATENT ASSIGNEE(S): Xerox Corp., USA  
SOURCE: U.S., 12 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6074791	A	20000613	US 1999-258379	19990226 <--
PRIORITY APPLN. INFO.:			US 1999-258379	19990226 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 133:24680

AB A photoconductive imaging member comprises a supporting substrate, a hole-blocking layer, a photogenerating layer, and a charge-transporting layer, wherein the hole-blocking layer comprises a metal oxide prepared by a sol-gel process.

IT 9003-22-9, Vinyl acetate-vinyl chloride copolymer  
24937-78-8, Ethylene-vinyl acetate copolymer  
(electrophotog. photoreceptors with hole-blocking  
layers containing metal oxides and)

RN 9003-22-9 HCA

CN Acetic acid ethenyl ester, polymer with chloroethene (CA INDEX NAME)

CM 1

CRN 108-05-4  
CMF C4 H6 O2

AcO—CH=CH2

CM 2

CRN 75-01-4  
CMF C2 H3 Cl

H2C=CH-Cl

RN 24937-78-8 HCA  
CN Acetic acid ethenyl ester, polymer with ethene (CA INDEX NAME)

CM 1

CRN 108-05-4  
 CMF C4 H6 O2



CM 2

CRN 74-85-1  
 CMF C2 H4



INCL 430058800  
 IPCI G03G0005-10 [ICM,7]  
 IPCR G03G0005-06 [I,C\*]; G03G0005-06 [I,A]; G03G0005-14 [I,C\*]; G03G0005-14 [I,A]  
 NCL 430/058.800; 430/059.400; 430/065.000  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 IT 9002-85-1, Poly(vinylidene chloride) 9002-89-5, Poly(vinyl alcohol) 9003-01-4, Poly(acrylic acid) 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Poly(vinylpyrrolidone) 9003-47-8, Poly(vinylpyridine) 9004-57-3, Ethylcellulose 9004-64-2, Hydroxypropylcellulose 9004-67-5, Methylcellulose 9005-25-8, Starch, uses 24937-78-8, Ethylene-vinyl acetate copolymer 25322-68-3, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide) (electrophotog. photoreceptors with hole-blocking layers containing metal oxides and)

RETABLE

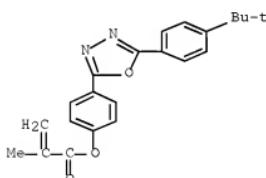
Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RPG)	Referenced (RWK)	File
Arnal, P		1997	9	1694	Chem Mater		HCA
Ashiya		1996			US 5582948		HCA
Badesha		1992			US 5116703		HCA
Barbe, C		1997	180	3157	J Am Ceram Soc		HCA
Brinker, C		1990		21	Sol-Gel Science, Cha		
Burt		1996			US 5493016		HCA
Burt		1996			US 5521306		HCA
Duff		1997			US 5645965		HCA
Flory, P		1974	57	7	Chem Society		HCA
Hongo		1994			US 5286591		HCA
Hor		1986			US 4587189		HCA
Katayama		1996			US 5489496		HCA
Keoshkerian		1996			US 5482811		HCA
Livage, J		1990	73	717	Mat Res Soc Symp Pro		
Lu		1982			US 4388390		HCA
Mayo		1995			US 5473064		HCA
O'Regan, B		1990	94	8720	J Phys Chem		HCA
Yu		1991			US 5013624		
OS.CITING REF COUNT:		5	THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)				

L66 ANSWER 23 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 129:101428 HCA [Full-text](#)  
 ORIGINAL REFERENCE NO.: 129:20745a,20748a  
 TITLE: Concentration effects on charge transport in dye doped  
 polymer light emitting diodes  
 AUTHOR(S): Nunzi, J. -M.; Gautier-Thianche, E.; Lorin, A.; Denis,  
 C.; Raimond, P.; Sentein, C.  
 CORPORATE SOURCE: LETI (CEA-Technologies Avancees), DEIN, Service de  
 Physique Electronique, Groupe Composants Organiques,  
 CEA / Saclay, Gif sur Yvette, 91191, Fr.  
 SOURCE: Proceedings of SPIE-The International Society for  
 Optical Engineering (1998), 3281(Polymer  
 Photonic Devices), 302-309  
 CODEN: PSISDG; ISSN: 0277-786X  
 PUBLISHER: SPIE-The International Society for Optical Engineering  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Light emitting diodes made of a single spin-coated layer of poly(9-vinylcarbazole) doped with coumarin-515 dye were studied. The influence of dye concentration on emission and elec. characteristics is evidenced. Two different regimes are identified. At low concns., apparent hole injection barrier raises, holes are trapped and mobility decreases. External quantum efficiency increases with concentration. At concns. larger than 10 %wt, coumarin aggregates, photoluminescence yield drops and electroluminescence yield increases up to 0.1 %photons per electron. We show that using coumarin dye in a single-layer diode improves electron-hole injection and recombination balance more than using an addnl. hole-blocking layer.  
 IT 206364-60-5  
 (hole blocking layer in poly(9-vinylcarbazole) blue  
 electroluminescent device)  
 RN 206364-60-5 HCA  
 CN 2-Propenoic acid, 2-methyl-, 4-[5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl]phenyl ester, homopolymer (CA INDEX NAME)

CM 1

CRN 206364-59-2

CMF C22 H22 N2 O3



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 38, 76  
 IT 206364-60-5  
 (hole blocking layer in poly(9-vinylcarbazole) blue  
 electroluminescent device)

## RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RWK)	Referenced File
			(R PY)	(R VL)	(R PG)	
Adachi, C		1990	156	1799	Appl Phys Lett	HCA
Gautier, E		1996	169	1071	Appl Phys Lett	HCA
Gautier, E		1996	181	197	Synth Met	HCA
Gill, W		1976	1	63	Photoconductivity an	
Kido, J		1994	164	1815	Appl Phys Lett	HCA
Kido, J		1995	167	12281	Appl Phys Lett	HCA
Nishino, H		1995	168	1243	Synth Met	HCA
Pai, D		1970	152	12285	J Chem Phys	HCA
Schlatmann, A		1996	169	1764	Appl Phys Lett	HCA
Strukelj, M		1995	1267	1969	Science	HCA
Tokuhisa, H		1995	166	13433	Appl Phys Lett	HCA
van Slyke, S		1996	169	2160	Appl Phys Lett	HCA
Vestweber, H		1994	164	141	Synth Met	HCA
Weissmantel, C		1981	1	361	Grundlagen der Festk	
Wu, C		1997	144	1269	IEEE Trans Electr De	HCA
Zhang, C		1995	172	185	Synth Met	HCA

L66 ANSWER 24 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 128:3895 HCA Full-text

ORIGINAL REFERENCE NO.: 128:847a, 850a

TITLE: Synthesis and Characterization of Aromatic Poly(1,3,5-triazine-ether)s for Electroluminescent Devices

AUTHOR(S): Fink, Ralf; Frenz, Carsten; Thelakkat, Mukundan; Schmidt, Hans-Werner

CORPORATE SOURCE: Makromolekulare Chemie I and Bayreuther Institut fuer Makromolekulforschung (BIMF), Universitaet Bayreuth, Bayreuth, 95440, Germany

SOURCE: Macromolecules (1997), 30(26), 8177-8181  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Various difluoro functionalized aromatic 1,3,5-triazine monomers were prepared. A series of poly(1,3,5-triazine-ether)s was synthesized by polycondensation with 4,4'-hexafluoroisopropylidenebis[phenol]. The polymers have excellent thermal stability and are amorphous with glass transition temps. in the range 190-250°. In order to examine the potential application these polymers may possess for use in organic electroluminescent devices, the redox properties were studied by cyclic voltammetry. The monomers have high electron affinities and reach LUMO values in the range of -2.7 to -3.1 eV. This opens the possibility to utilize 1,3,5-triazine-containing materials as electron injecting/hole blocking layers in light emitting devices (LEDs). Initial LED results are in accordance with these high electron affinities.

IT 66-77-3, 1-Naphthaldehyde 455-19-6,

4-(Trifluoromethyl)benzaldehyde 872-05-5,

4-Pyridinecarboxaldehyde 4363-93-3, 4-Formylquinoline

(reactant; in synthesis of difluoro aromatic triazine monomers for preparation

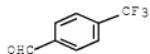
of polymers as hole blocking/electron transport layers for use in multilayer light emitting devices)

RN 66-77-3 HCA

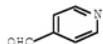
CN 1-Naphthalenecarboxaldehyde (CA INDEX NAME)



RN 455-19-6 HCA  
 CN Benzaldehyde, 4-(trifluoromethyl)- (CA INDEX NAME)



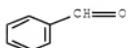
RN 872-85-5 HCA  
 CN 4-Pyridinecarboxaldehyde (CA INDEX NAME)



RN 4363-93-3 HCA  
 CN 4-Quinolinecarboxaldehyde (CA INDEX NAME)



IT 100-52-7, Benzaldehyde, reactions  
 (reactant; in synthesis of difluoro aromatic triazine monomers for  
 synthesis of polymers as hole blocking/electron  
 transport layers for use in multilayer light emitting devices)  
 RN 100-52-7 HCA  
 CN Benzaldehyde (CA INDEX NAME)



CC 35-2 (Chemistry of Synthetic High Polymers)  
 IT 62-53-3, Benzenamine, reactions 64-17-5, Ethanol, reactions  
 66-77-3, 1-Naphthaldehyde 455-19-6,  
 4-(Trifluoromethyl)benzaldehyde 872-85-5,  
 4-Pyridinecarboxaldehyde 1194-02-1, 4-Fluorobenzonitrile  
 4363-93-3, 4-Formylquinoline

(reactant; in synthesis of difluoro aromatic triazine monomers for preparation of polymers as hole blocking/electron transport layers for use in multilayer light emitting devices)  
 IT 100-52-7, Benzaldehyde, reactions (reactant; in synthesis of difluoro aromatic triazine monomers for synthesis of polymers as hole blocking/electron transport layers for use in multilayer light emitting devices)

## RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RWK)	Referenced File
			(RPY)	(RVL)	(RPG)	
Adachi, C		1990	57	1531	Appl Phys Lett	HCA
Bard, A		1980	1	1634	Electrochemical Meth	
Bettenhausen, J		1996	18	1507	Adv Mater	HCA
Borovik, V		1991	14	196	Sib Khin Zh	
Brown, A		1992	61	12793	Appl Phys Lett	HCA
Buchwald, E		1995	7	1839	Adv Mater 7	HCA
Burroughes, J		1990	1347	1539	Nature (London)	HCA
Gmeiner, J		1993	144	201	Acta Polym	HCA
Kido, J		1993	132	1L917	Jpn J Appl Phys	HCA
Koepf, H		1960	164	1483	Z Electrochem	HCA
Moratti, S		1995	71	2117	Synth Met	HCA
Perrin, D		1988	1	1	Purification of Labo	
Pommerhne, J		1995	7	1551	Adv Mater	HCA
Rossbach, V		1992	1	1	Handbook of Polymer	
Shirota, Y		1994	165	1807	Appl Phys Lett	HCA
Solomon, D		1972	1	1	Step-Growth Polymeri	
Strukelj, M		1995	117	11976	J Am Chem Soc	HCA
Strukelj, M		1995	1	1267	Science	
Tang, C		1987	51	1913	Appl Phys Lett	HCA
Von Seggern, H		1994	1	12023	Macromol Chem Phys	HCA
Yamamoto, T		1996	118	13939	J Am Chem Soc	
Yang, Y		1995	77	1694	J Appl Phys	HCA
OS.CITING REF COUNT:		66	THERE ARE 66 CAPLUS RECORDS THAT CITE THIS RECORD (67 CITINGS)			

L66 ANSWER 25 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 127:323987 HCA Full-text

ORIGINAL REFERENCE NO.: 127:63427a,63430a

TITLE: Multilayer light emitting diodes based on columnar discotics

AUTHOR(S): Staffel, Inga H.; Stumpflen, Volker; Wendorff, Joachim H.; Spohn, Daniela B.; Mobius, Dietmar

CORPORATE SOURCE: Fachbereich Physikalische Chemie und Wissenschaftliches Zentrum für Materialwissenschaften, Philipps-Universität Marburg, Marburg, D-35032, Germany

SOURCE: Liquid Crystals (1997), 23(4), 613-617

PUBLISHER: Taylor & Francis

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Columnar discotics were used as the hole transporting layer in single layer, two layer and three layer light emitting diodes because of the unusually large hole mobility of such materials. The observations are that the onset fields are small compared with most devices using non-discotic hole transporting layers, that these values are strongly reduced with increasing number of layers, that the orientation of the columns along the layer film normal causes

a further decrease of the onset voltage and finally that the quantum efficiencies increase significantly as the number of layers is increased.  
IT 1120-28-1, Arachidic acid methyl ester  
(bole blocking layer; light emitting diode containing  
columnar discotic hole transport layer and)  
RN 1120-28-1 HCA  
CN Eicosanoic acid, methyl ester (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 75, 76  
IT 1120-28-1, Arachidic acid methyl ester 197786-11-1  
(hole blocking layer; light emitting diode containing  
columnar discotic hole transport layer and)

**RETABLE**

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Adachi, C	1989	155	1489	Appl Phys Lett	HCA
Adachi, C	1988	27	713	Jpn J appl Phys	
Adam, D	1994	17	276	Adv Mater	
Adam, D	1994	371	141	Nature	HCA
Adam, D	1993	70	457	Phys Rev Lett	HCA
Blodgett, K	1935	57	1007	J Am chem Soc	HCA
Braun, D	1991	58	1982	Appl Phys Lett	HCA
Burroughes, J	1990	347	539	Nature	HCA
Christ, T	1997	19	48	Adv Mater	HCA
Christ, T	1997	18	93	Macromol rap Com	HCA
Christ, T	1997	1		Thin Solid Films in	
Era, M	1991	78	488	Chem Phys Lett	
Gailberger, M	1991	44	8643	Phys Rev B	HCA
Hosokawa, C	1992	61	2503	Appl Phys Lett	HCA
Kido, J	1992	61	761	Appl Phys Lett	HCA
Langmuir, J	1939	170	15	Proc r Soc London, S	
Pommerehne, J	1996	7	1551	Adv Mater	
Sander, R	1996	29	17705	Macromolecules	HCA
Simmerer, J	1996	18	815	Adv Mater	HCA
Tang, C	1987	51	913	Appl Phys Lett	HCA
Tokushisa, H	1996	1	62	Myazaki Int Symp, Ko	
Vestweber, H	1992	4	661	Adv Mater	HCA
Vestweber, H	1994	64	141	Synth Met	HCA
Wu, A	1994	1	2319	Chem Lett	HCA
OS.CITING REF COUNT:	78	THERE ARE 78 CAPLUS RECORDS THAT CITE THIS RECORD. (78 CITINGS)			

RECORD (% CEILINGS)

L66 ANSWER 26 OF 31 HCA COPYRIGHT 2011 ACS on SIN  
ACCESSION NUMBER: 126:284923 HCA Full-text  
ORIGINAL REFERENCE NO.: 126:55025-55028

ORIGINAL REFERENCE NO.: 126:55035a, 55038a

TITLE: Photoluminescence and electroluminescence of the blue emission of devices based on poly(*p*-Phenylenevinylene) copolymers

AUTHOR(S) : Ma, Dong-ge; Hong, Zhi-yong; Zhao, Xiao-jiang; Jing, Xia-bin; Wang, Fo-song; Shi, Jia-wei; Liu, Ming-da; Jin, En-shun; Li, Shu-wen

January 3, 2011

10/581,005

73

CORPORATE SOURCE: Changchun Inst. of Applied Chem., Chinese Academy of Sciences, Changchun, 130022, Peop. Rep. China  
SOURCE: Chinese Physics Letters (1996), 13(12), 940-943  
PUBLISHER: Chinese Physical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Bright blue polymer light-emitting diodes have been fabricated by using the poly(p-phenylenevinylene)-based copolymers with 10 C long aliphatic chains as the electroluminescent layers, PBD in PMMA and 8-hydroxyquinone aluminum (Alq3) as the electron-transporting layers, and aluminum as the cathode. The multilayer structure devices show 190 cd/m<sup>2</sup> light-emitting brightness at 460 nm, 15 V turn-on voltage. It is found that the intensities of photoluminescence and electroluminescence (EL) increase with increasing aliphatic chain length, the EL intensity and operation stability of these polymer light-emitting diodes can be improved by reasonable design of the structure.

IT 9011-14-7, PMMA  
(hole-blocking layer; photoluminescence and  
electroluminescence of blue emission of devices based on  
poly(p-phenylenevinylene) copolymers)

RN 9011-14-7 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, homopolymer (CA INDEX NAME)

CM 1

CRN 80-62-6

CMF C5 H8 O2



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38

IT 9011-14-7, PMMA  
(hole-blocking layer; photoluminescence and  
electroluminescence of blue emission of devices based on  
poly(p-phenylenevinylene) copolymers)

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD  
(4 CITINGS)

L66 ANSWER 27 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 126:278090 HCA Full-text

ORIGINAL REFERENCE NO.: 126:53919a,53922a

TITLE: New CF<sub>3</sub>-substituted PPV-type oligomers and polymers  
for use as hole blocking layers in LEDs  
AUTHOR(S): Lux, A.; Holmes, A. B.; Cervini, R.; Davies, J. E.;  
Moratti, S. C.; Gruener, J.; Cacialli, F.; Friend, R.  
H.

CORPORATE SOURCE: Department of Chemistry, University Chemical  
Laboratory, University of Cambridge, Cambridge, CB2  
1EW, UK

SOURCE: Synthetic Metals (1997), 84(1-3), 293-294  
PUBLISHER: Elsevier

CODEN: SYMEDZ; ISSN: 0379-6779

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB New CF<sub>3</sub>-substituted poly(p-phenylenevinylene) derivs. were synthesized by Wittig-Horner polycondensation. To obtain a better understanding of the relationship between absorption and luminescence properties and structure a single crystal x-ray anal. of a model oligomer was performed. The effect of electron withdrawing trifluoromethyl groups at vinylidene linkages in PPVs on absorption, luminescence, hole blocking and electron injecting properties was investigated.

IT 188997-75-3P 188997-78-6P

(preparation and properties of trifluoromethyl-substituted poly(p-phenylenevinylene) derivs. synthesized by Wittig-Horner polycondensation for use as hole blocking layers in light emitting diodes)

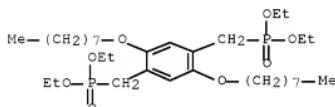
RN 188997-75-3 HCA

CN Phosphonic acid, [(2,5-bis(octyloxy)-1,4-phenylene]bis(methylene)]bis-, tetraethyl ester, polymer with 1,1'-(1,4-phenylene)bis[2,2,2-trifluoroethanone] (9CI) (CA INDEX NAME)

CM 1

CRN 176856-31-8

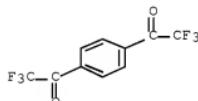
CMF C32 H60 O8 P2



CM 2

CRN 86988-48-9

CMF C10 H4 F6 O2



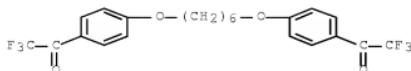
RN 188997-78-6 HCA

CN Phosphonic acid, [(2,5-bis(octyloxy)-1,4-phenylene]bis(methylene)]bis-, tetraethyl ester, polymer with 1,1'-(1,6-hexanediylibis(oxy-4,1-phenylene)]bis[2,2,2-trifluoroethanone] (9CI) (CA INDEX NAME)

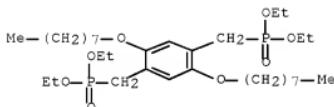
CM 1

CRN 188997-77-5

CMF C22 H20 F6 O4



CM 2

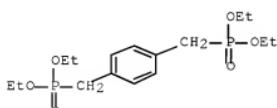
CRN 176856-31-8  
CMF C32 H60 O8 P2

IT 434-45-7 4546-04-7, *p*-Xylylenebis(diethyl phosphonate)  
 (reactant; preparation and properties of trifluoromethyl-substituted poly(*p*-phenylenevinylene) derivs. synthesized by Wittig-Horner polycondensation for use as hole blocking layers in light emitting diodes)

RN 434-45-7 HCA  
 CN Ethanone, 2,2,2-trifluoro-1-phenyl- (CA INDEX NAME)



RN 4546-04-7 HCA  
 CN Phosphonic acid, *P,P'*-[1,4-phenylenebis(methylene)]bis-, *P,P',P',P'*-tetraethyl ester (CA INDEX NAME)



CC 37-3 (Plastics Manufacture and Processing)  
 IT 188997-75-3P 188997-76-4P 188997-78-6P 188997-79-7P  
 (preparation and properties of trifluoromethyl-substituted poly(*p*-phenylenevinylene) derivs. synthesized by Wittig-Horner polycondensation for use as hole blocking layers in light emitting diodes)

IT 434-45-7 4546-04-7, p-Xylylenebis(diethyl phosphonate)  
 (reactant; preparation and properties of trifluoromethyl-substituted  
 poly(p-phenylenevinylene) derivs. synthesized by Wittig-Horner  
 polycondensation for use as hole blocking layers in  
 light emitting diodes)

OS.CITING REF COUNT: 52 THERE ARE 52 CAPLUS RECORDS THAT CITE THIS  
 RECORD (52 CITINGS)

L66 ANSWER 28 OF 31 HCA COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 122:147285 HCA Full-text  
 ORIGINAL REFERENCE NO.: 122:27075a,27078a  
 TITLE: Structurally simplified electrophotographic imaging  
 member

INVENTOR(S): Yu, Robert C. U.

PATENT ASSIGNEE(S): Xerox Corp., USA

SOURCE: U.S., 14 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5378566	A	19950103	US 1992-970459	19921102 <--
PRIORITY APPLN. INFO.:			US 1992-970459	19921102 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB An electrophotog. imaging member including a substrate, a hole blocking adhesive layer, a charge generating layer and a charge transport layer, the hole blocking adhesive layer including a polyester film forming binder having dispersed therein a particulate reaction product of metal oxide particles and a hydrolyzed reactant selected from the group consisting of a N containing organo silane, an organotitanate and an organozirconate and mixts. thereof. Preferably, the electrophotog. imaging member is free of any distinct adhesive layer in contiguous contact with the hole. blocking adhesive layer. This imaging member may be used in an electrophotog. imaging process.

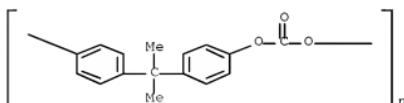
IT 24936-68-3, Makrolon 5705, uses 25038-59-9, Melinex 442,

uses

(electrophotog. photoconductor with hole blocking  
 layer from polyester dispersed coupling agent)

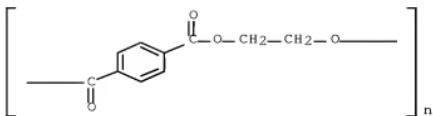
RN 24936-68-3 HCA

CN Poly[oxycarbonyloxy-1,4-phenylene(1-methylethylidene)-1,4-phenylene] (CA  
 INDEX NAME)



RN 25038-59-9 HCA

CN Poly(oxy-1,2-ethanediylloxycarbonyl-1,4-phenylenecarbonyl) (CA INDEX NAME)



INCL 430058000

IPC1 G03G0005-14 [ICM,6]

IPC1 G03G0005-14 [I,C\*]; G03G0005-14 [I,A]

NCL 430/058.050; 430/064.000; 430/908.000

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 919-30-2 7631-86-9D, Silica, (3-aminopropyl)trimethylsilane-modified 24936-68-3, Makrolon 5705, uses 24938-04-3 25038-59-9, Melinex 442, uses 161445-56-3, Aerosil S 506 (electrophotog. photoconductor with hole blocking layer from polyester dispersed coupling agent)

## RETABLE

Referenced (RAU)	Author	Year	VOL	PG	Referenced Work (RVL)	Referenced Work (RPG)	Referenced Work (RWK)	File
Anon					US 4464450 A			HCA
Anon					US 4654284 A			HCA
Anon					US 4664995 A			HCA
Anon					US 4786570 A			HCA
Anon					US 4869988 A			HCA
Anon					US 4946754 A			HCA
Anon					US 5008169 A			HCA

OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS RECORD (12 CITINGS)

L66 ANSWER 29 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 99:6675 HCA Full-text

ORIGINAL REFERENCE NO.: 99:1193a,1196a

TITLE: Paving and floor block composition

INVENTOR(S): Bunner, Matthew R.; Heinrichs, William H.

PATENT ASSIGNEE(S): Industrial Wood Products, Inc., USA

SOURCE: U.S., 7 pp.

CODEN: USXKAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4381328	A	19830426	US 1981-301221	19810911 <-- US 1981-301221 19810911 <--

PRIORITY APPLN. INFO.: IN LSUS DISPLAY FORMAT

AB A composition and method is provided for forming paving and floor blocks which comprises forming a mixture of wood particles, phenolic resin, and paraffin wax for mold release properties and molding the composition into blocks containing a plurality of holes on the underside. Thus, wood particles (14-20 mesh) 88.5, formaldehyde-phenol copolymer [9003-35-4] 9.5, and paraffin wax 2.0% were mixed and molded at 320°F at 400 psi into a block having holes on

the underside extending to within  $\geq 1/2$  in. of the top surface and  $\geq 0.4$  in. apart.

INCL 428171000

IPC1 B32B0003-26 [ICM]; B32B0005-16 [ICS]

IPC2 B27N0005-00 [I,C\*]; B27N0005-02 [I,A]

NCL 428/171.000; 428/170.000; 428/218.000; 428/326.000; 428/332.000;  
428/485.000

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 43

## RETABLE

Referenced	Author	Year	VOL	PG	Referenced Work	Referenced
(RAU)		(R PY)	(R VL)	(R PG)	(R WK)	File
Anon					US 3988183 A	HCA
Anon					US 4241133 A	

L66 ANSWER 30 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 84:18679 HCA Full-text

ORIGINAL REFERENCE NO.: 84:3101a,3104a

TITLE: Continuous production of propylene oxide

INVENTOR(S): Yamagishi, Kazuo; Kageyama, Osamu; Numa, Sadaaki

PATENT ASSIGNEE(S): Daicel Ltd., Japan

SOURCE: Jpn. Tokkyo Koho, 6 pp.

CODEN: JAXXAD

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 50024284	B	19750814	JP 1974-79416	19740711 <-- JP 1974-79416 A 19740711 <--

PRIORITY APPLN. INFO.: AB A tubular reactor is described for the continuous preparation of propylene oxide [75-56-9] from propylene (I) [115-07-1] and peracetic acid (II) [ 79-21-0]. The reactor has continuous reaction zones defined by blocking plates having holes of 2-10 mm diameter, the total area of the holes being 1-20%. A solution of II in an organic solvent was fed into the reaction zones from one end, and at the same time, I was introduced such that the I partial pressure was  $\geq 3$  kg/cm<sup>2</sup>, thereby forming I bubbles which agitate the reaction solution in each zone. The product was removed from the opposite end of the reactor. IPC1 C07D0301-14; C07D0301-00 [C\*]; C07D0303-04; C07D0303-00 [C\*]

IPC2 C07D0301-00 [I,C\*]; C07D0301-14 [I,A]; C07D0303-00 [I,C\*]; C07D0303-04 [I,A]

CC 37-2 (Plastics Fabrication and Uses)

Section cross-reference(s): 27

L66 ANSWER 31 OF 31 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 77:76265 HCA Full-text

ORIGINAL REFERENCE NO.: 77:12585a,12588a

TITLE: Compositions for securing fixing elements

INVENTOR(S): Murphy, John Michael

PATENT ASSIGNEE(S): Explosives and Chemical Products Ltd.

SOURCE: Brit., 5 pp.

CODEN: BRXXAA

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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GB 1277425	19720614	GB 1968-52703	19681106	<--
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AB A styrene [100-42-5] -containing Leguval K25R (I) [12688-27-6] polyester resin sheet cured with a filler-containing benzoyl peroxide [94-36-0] formed a hand-kneadable composite used for securing and anchoring bolts in concrete constructions. For example, a polyester sheet layer containing I, diisooctyl maleate(II), dolomite dust, asbestos fiber, and Aerosil silica was contacted with a sheet containing BzOOH, II, dolomite dust, asbestos fiber, and Aerosil silica. This composite was hand-kneaded until homogeneous, rolled into cylindrical shape, and placed in drilled concrete block holes. The bolt was inserted into the composite, and after 12 min, a load of 1500-1800 lb was required to remove the bolt. IPCI C08F

IPCR B32B0015-08 [I,C\*]; B32B0015-08 [I,A]; C08F0283-00 [I,C\*]; C08F0283-01 [I,A]

CC 37-3 (Plastics Fabrication and Uses)